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OF

DENTAL SCIENCE.

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Contributions.

"A word fitly spoken is like apples of gold."—SOLOMON.

SOME NOTES ON EXPERIMENTAL IMPLANTATION OF TEETH.*

BY M. H. FLETCHER, D.D.S., M.D., CINCINNATI, O.

THIS paper is a report of an incomplete series of experiments on the implantation of teeth. Though the experiments are incomplete they were carried far enough to indicate at least one important fact, namely, that the pericementum probably plays no part in the repair and retention of implanted teeth, but that such success as is attained is due to the re-organization of the cementum.

In order that the writer's position may not be misunderstood, it seems necessary to define a few terms which have been employed in explaining the success and failure of implanted teeth in the present status of the operation. Terms will be used in this paper with the following meanings:

CASES OF FAILURE.—To be understood as including those in which implanted teeth have been lost from any cause within six weeks from time of insertion.

---

* Read before the Ohio State Dental Society, held at Columbus, October, 1890.

Partial Success.—Including those cases in which the teeth have not become firm after a few months, and which show continual signs of local inflammation.

Success.—Including those cases where the implanted tooth has become apparently healthy and is usable, and in most cases perfectly rigid.

Complete Success.—Including those cases which may be found to be perfectly healthy and usable after a period of seven to ten years.

The history of implantation need not be repeated since it is familiar to all. But to speak of the various ideas and methods that have been followed is directly in point, for these show that we have been relying upon the wrong tissue for the success of the operation.

For instance, Dr. W. G. Younger, the originator of the process, believes that in order to be successful the peridental membrane should be intact on every part of the root. He has used both fresh and old teeth, but I believe uses old nearly altogether. He reports a large per cent. of successful cases.

Dr. George Cunningham is reported as saying in 1888: "Thus far I have used nothing but freshly extracted teeth, and believe that if a tooth is implanted before the death of the pericementum and cementum the prospect of union is increased, and the loss by absorption decreased. The general opinion seems to have prevailed that freshly extracted teeth would be more successful in implantation than old ones."

It seems to have been an almost universal opinion that the pericementum must be intact in order that these cases might be at all successful, the writer of this paper having held that opinion.

On the other hand, Dr. G. L. Curtis, who reports a very large number of successful cases, strips the entire membrane from the root, believing it to be a hindrance rather than a help in their repair. However, he gives no physiological reason for his opinion. So far as my knowledge goes Dr. Curtis is the only person on record who takes this view, and operates by denuding the roots of the teeth. And it would seem, according to the results of the experiments herein reported, to be a step in the right direction.

Dr. H. A. Smith's paper, entitled "Dental Implantation," read before the American Dental Association in August, 1889, and the discussion of the same, probably gives the latest and most reliable statistics and opinions on this subject. Computation from this paper shows a loss of about 17 per cent. of the cases reported. This is the nearest that can be calculated from the returns given. But it is probably far from correct, since so few who are known to have performed the operation responded to Dr. Smith. The probabilities are that there are many more cases of failure than have been reported. Also there probably is a large number who have performed the operation who have never been heard from in any way. This is more likely to be true especially if the results of their experiments were unsatisfactory. Dr. Smith's notes are compiled from operations performed prior to August, 1889.

The writer's own experience on the human subject is limited to six cases. One of these was a failure, three were partially successful, and two successful. But we consider even the successful cases as far from complete success, since they to-day show signs of inflammation in the region of the roots, in addition to a tendency of the gums and bone to recede from the neck of the tooth. They can be made to bleed easily by a moderate pressure of the finger on the gum over the tooth. These few cases are not sufficient to establish a rule, but the consideration of their symptoms in connection with the physiological processes probably involved in their repair tends to establish this opinion without further evidence.

The mystery connected with the subject of repair in implantation, and the various opinions expressed upon it, induced the writer to begin a series of experiments on the lower animals with a view of determining, if possible, what the real conditions are. These experiments you will readily understand were fraught with great difficulties in the absence of the knowledge of any preceding experiments in the same line.

After a conference with other histologists on the subject we decided to use a sheep for the first experiment, and the incisor teeth of small dogs for material. These teeth were selected because of their small size, thereby reducing the extent of the cutting necessary to perform the operation.

In the beginning the plan of procedure was to insert one or two teeth at a time, at periods of one to two months apart, thereby expecting to have for examination a complete series of the various stages of repair from its incipiency to its completion.

The experiments were begun April 16, 1889, by extracting the incisor teeth of a small cur. These were dried before the fire for several hours, after which the pulp chambers were thoroughly cleansed and disinfected, then filled with chlora-percha and gutta-percha nerve canal points.

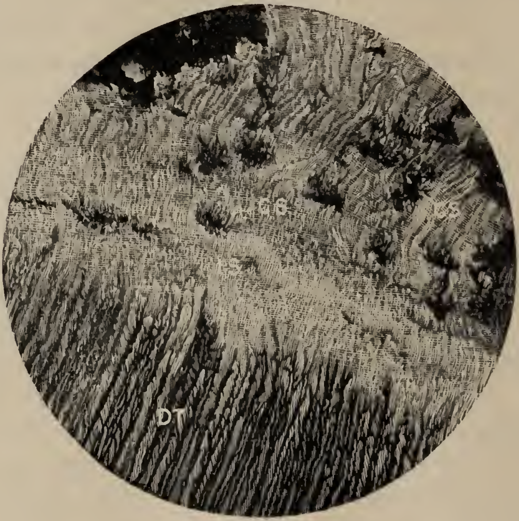

FIG. 1.*

FIG. 1—Represents normal dentine, the cementum, and the junction between them. D T, Dentinal Tubes ; I S, Interzonal Layer ; C S, Cement Cells ; X, 175.

April 19. Armed with the teeth and instruments for the experiment we repaired to the field of labor. When ready to begin, the greatest difficulty presenting itself related to the means by which the teeth could be held in position long enough for them to become fastened so that they might not drop out. Several plans had been considered. But when ready to proceed they were all abandoned, and a new one, suggested by my assistant, Dr. Arthur Knight, was adopted. This consisted of sewing the skin entirely over the teeth, the implantations all being made externally instead of in the mouth. I had intended to operate in the mouth, but abandoned the attempt on account of the extreme difficulties in the execution.

The first attempts were made on a sheep about 2½ years old.

---

* The illustrations accompanying this article are partly of the normal tissue for the purpose of comparison with those involved in the cases of implantation.

The animal was put under the influence of sulphuric ether, and the skin was laid open over the external surface of the cannon bone of the right hind leg one inch below the upper joint. A hole was drilled with a large fissure bur, endeavoring if possible to extend the opening into the cancellous portion of the bone, and yet in such a way as not to injure the joint though producing inflammation therein. One half of the crown was then cut off from a tooth in order that its point might not irritate the skin. After it was settled in the drilled socket we took two stitches in the incision in the skin drawing it together so as to cover the tooth completely, thus preventing it from dropping out when it became loosened by inflammation. After having dusted iodoform plentifully over the wound and into the hair of the vicinity the operation was considered completed.

A 1 to 1000 per cent. solution of bichloride of mercury was used freely on hands, instruments, and teeth, as well as in the wounds, during the operations.

A second tooth was inserted in the opposite hind leg in the corresponding position in the corresponding bone. The same plan of disinfecting, removing a part of the crown, and sewing up the skin, was followed in the second operation, as it was indeed in all subsequent implantations.

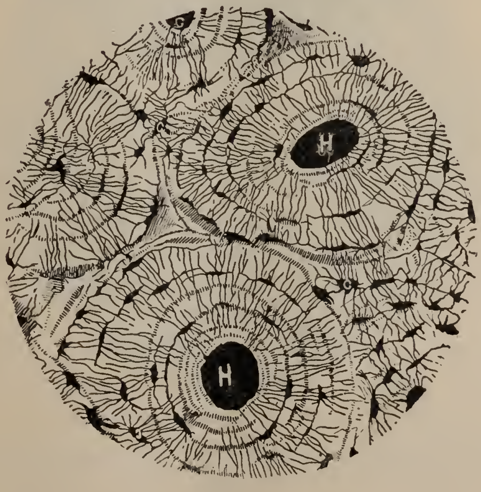

FIG. 2.

FIG. 2—Normal bone structure.

The animal revived slowly from the anæsthetic. It did not recover but died on the third day from what appeared to have been congestion of the lungs.

Thinking that a goat, being a more hardy animal, would be better adapted for the experiment, one was secured which was about three years old.

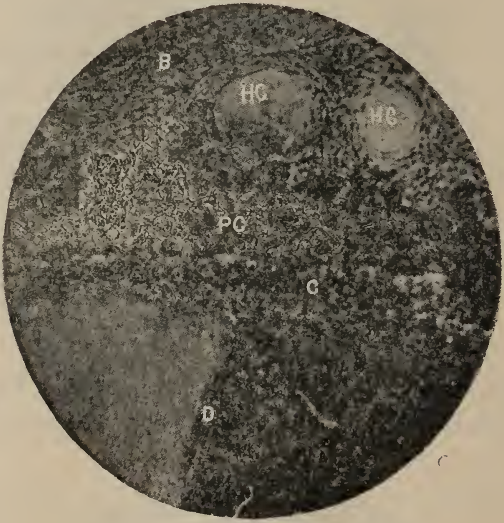

FIG. 3.

FIG. 3—Normal structure *in situ*, from the goat's jaw to be compared with Nos. 4 and 5. D, Dentine; C, Cementum; P C, Pericementum; H C, Haversian Canals; B, Bone; X. 50.

April 29. The goat was secured to a bench, and given something to eat instead of being anæsthetized. One tooth was inserted in each hind leg in substantially the same manner as was done in the case of the sheep. Within a few days considerable inflammatory exudation occurred in the region of the wounds, but this terminated by resolution in its normal time.

No further attempt was made at implanting until June 14, when we inserted a tooth in the lower border of the inferior maxillary bone, left side, about two inches anterior to the angle. Another attempt was made at this time to insert a tooth inside the mouth, into the lower maxillary, but it was entirely unsuccessful. The remaining teeth were all inserted in the lower border of the inferior maxillary bone on eiter side, and about ½ inch apart, in the same manner as before described. The cuts in the skin healed in the normal time for such tissue to repair. The operations were performed on the following dates:

1889, April 26, 2 teeth.
" June 14, 1 tooth.
" July 27, 1 tooth.
" August 8, 2 teeth.
" November 8, 1 tooth.
1890, January 17, 2 teeth,

making in all nine teeth implanted.

Only two of the operations in the jaw produced any swelling. In one of these a point of the drill was broken off and remained in the bone, and in the other the tooth was allowed to play very loosely in the socket as a matter of experiment. This tooth was one which had been denuded of pericementum, the only one so prepared. The escape of these foreign bodies from the bone to the skin probably produced the swelling in these cases.

On May 3, 1890, one year and two weeks from the date of the first operation on the goat, the animal was killed, and the bones containing the implanted teeth were dissected out and examined.

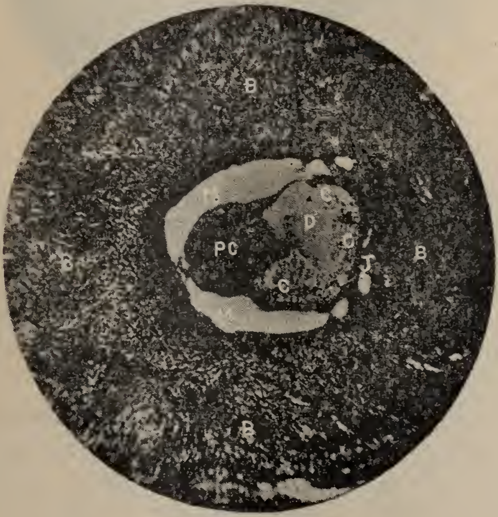

FIG. 4.

FIG. 4—Section through an implanted tooth showing surrounding tissues. Junction with bone at J. B, Bone; C, Cementum; D, Dentine; P C, Pulp Canal filled with gutta-percha; M, Marrow space; X, 10.

On removing the skin from the bones it was found that some of the teeth remained with the crown above the bone. But they were invariably covered with periosteum, and all but two apparently had undergone complete decalcification as far as could be judged from outside appearance. The periosteum covering the crown of the tooth and that, projecting into the socket, as well as that in the immediate neighborhood, seemed free from inflammation. The bone immediately adjacent to each tooth showed signs of having been inflamed and had become hypertrophied to an extent that left the tooth or its remnants in a funnel-shaped depression.

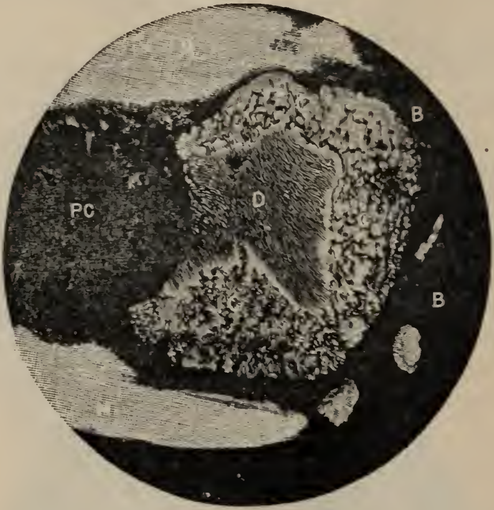

FIG. 5.

FIG. 5—Represents a section through same tissues. X, 50 showing thin structure more plainly. D, Dentine; C, Cementum (to be compared with the cement cells in Fig. 1); P C, Pulp Canal filled with gutta-percha; B, Bone where the ridged union with the tooth occurs.

Some of the teeth seemed to have disappeared completely: nothing remaining to be seen of two of them but the gutta-percha which had been used to fill the root canal. This was found underneath the pericementum just over the site of implantation.

Blocks of bone containing the teeth or their remains were now sawed from the body of the bone and placed, some in alcohol, some in Muller's fluid, where they remained for two weeks, and then were cut into hard sections by filing and polishing, and are here represented in photo-micrographs. Two are being decalcified for sections with the microtome.

On making sections some seem to have been completely decalcified, yet with very little or no characteristics of either dentine, cementum, or enamel remaining. In three some dentine was left. One of them had enamel upon it which had become surrounded by periosteum, it having grown into the socket. But the periosteum was not attached to the tooth. Absorption of the root had progressed until fully half of it had disappeared, the absorption having gone up two sides of the tooth into the crown. A photo-micrograph from this specimen, as well as other sections, will be shown so that the matter may be better understood.

The most interesting section made is one cut from the tooth implanted June 14, 1889, it having remained in position a little less than a year. In this case the cementum has apparently become organized on two sides and thoroughly ankylosed to the adjacent bone. And not only this but the cementum seems to have progressed in growth at the expense of the dentine. This condition can be seen plainly in the accampanying photo-micrograph of the section. Now while the fact that this one tooth has thus united does not prove that all others will do so, yet it seems to give to us a hint as to how the retention and rigidity of these teeth is to be explained. This termination of this case is a phys-

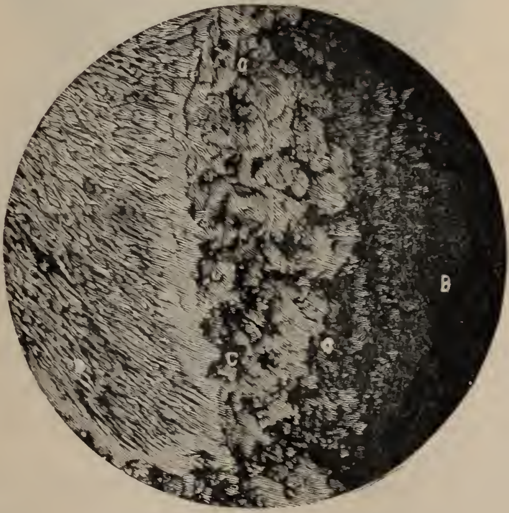

FIG. 6.

FIG. 6—Represents a section taken from the place of union between implanted tooth, with bone. B, Bone; D, Dentine; C, Cement Cells; X, 340.

iological process and explains the much discussed question of the processes which occur in implanted teeth. It also presents a satisfactory explanation of their permanency or complete success. As stated before in this paper the pericementum probably cuts no figure whatever in their repair, but is simply to be gotten rid of by absorption before organization of the cementum can begin.

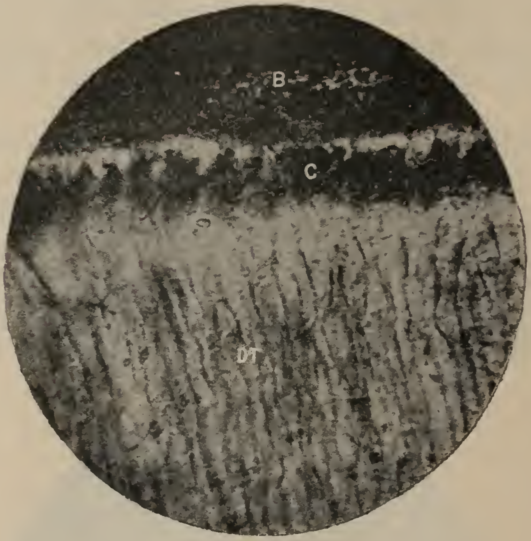

FIG. 7.

FIG. 7—Section of normal structure through one of the dog teeth such as were used to implant, showing only a single row of cement cells. D T, Dentinal Tubes; C, Cement Cells; B, Bone.

Now, if the foregoing be facts, the writer believes that complete success cannot be obtained in implanting teeth as now practiced, for the following reasons:

1. The teeth and the bones of the body are developed from quite different structures and are formed in entirely different ways. The teeth arise from the mucous membrane (the epiblast), while the bones originate from the periosteum, the marrow, and hyaline cartilage (the mesoblast). Dentine is formed by a stationary cell, the odontoblast, of which only the processes become surrounded by dentine while the bone is formed by the osteoblast, a floating or migrating cell, which itself finally becomes incorporated in the bone tissue. But you may say the cementum is not

dentine. And neither is it bone. It has few or no Haversian canals, and derives its nourishment from the pericementum, the office of which we believe is to produce and nourish cementum. Our experiments seem to show, however, that cementum can be increased without the membrane. If it were a fact that the dried pericementum on the roots of implanted teeth took a new life and performed its functions as it once did, then would we have a complete success of these operations.

If it were possible to implant immediately freshly extracted teeth, then the chances of success probably would be equal to those of skin or bone grafting. Or if we could take from a living fœtus the dental follicle and implant it with its surrounding tissue into another and older jaw, we probably would stand a chance of its retaining life and ultimately developing into a tooth. The latter case, of course, is totally impracticable, and the former almost as much so, for, if the proper teeth could be obtained of suitable size and shape the necessary delay in preparing the root canal would most likely be fatal to the success of the operation.

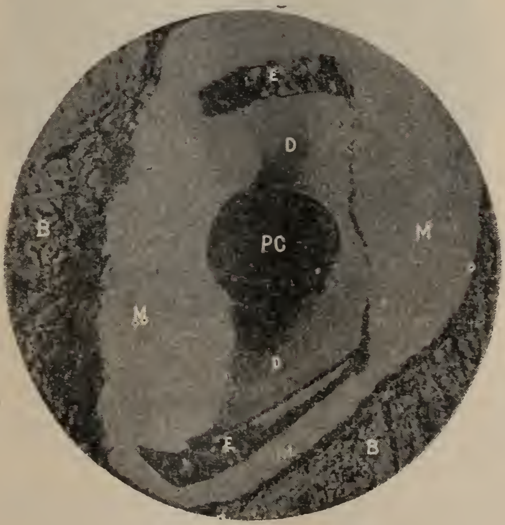

FIG. 8.

FIG. 8—Represents a section through the tooth in which the hypertrophied bone had enclosed the enamel above the neck of the tooth and the absorption on two sides. B, Surrounding Bone; M, Marrow spaces; D, Dentine; E, Enamel; P C, Pulp Canal filled with gutta-percha; X, 10.

Again, supposing the cementum does become organized, as we attempt to show, it can but grow and be replaced by new material at the expense of the dentine of the root in the same manner that older Haversian systems are resorbed and replaced by new ones. This process of bone resorption and repair probably continues during the life of the animal, and in the light of biology it can only be so. Now, if resorption takes place continually in vital tissure it certainly cannot be less true in dead tissue, such as the dentine of an implanted tooth unquestionably is. Consequently it would only be a few years until the entire root would be absorbed and its place taken by new material. Whether this new material would be bone or cementum we do not know, but it most likely would ultimately be bone, for it would be built by bone-producing tissues, the cementum having in time become absorbed. The fate of transplanting and replanting is not yet forgotten. And yet these operations came nearer the necessary requirements than does implanting.

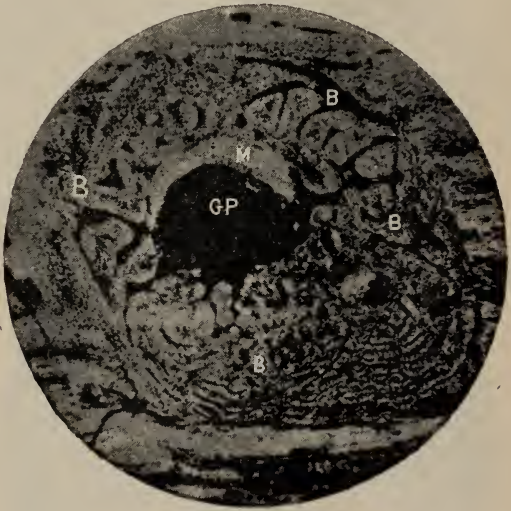

FIG. 9.

FIG. 9—Is a section through one of the bones where a tooth had been set. The line cut by the drill can be plainly seen by the difference in the face structure. Nothing remained in this case but the gutta-percha (marked G P) which had formerly filled the pulp canals. B, Bone; M, Marrow space; G P, Gutta-percha.

While preparing the present notes my attention has been called to a report of some experiments bearing directly upon the points in question, that of the organization of dead bone, which we believe to be comparable to the organization of dead cementum. They were carried on by William B. Hopkins, M.D., and C. B. Penrose, M.D., Ph.D., of Philadelphia, and published April 5, 1890, in the *Journal of the American Medical Association.* These experiments were to determine the practicability of the use of sterilized dead bone dowels in the union of fractures. These dowels were sterilized by first boiling them thoroughly and then keeping them in an alcoholic solution of corrosive sublimate (1 to 1000)ready for use. Their methods of procedure were to drill through or into the bones of young dogs and insert a sterilized bone peg which exactly fitted the hole. This was done both in normal and fractured bones. To give the results I quote from their article as follows:

EXPERIMENT NO. 1.

"The extremities of the dowel which were in contact with the shaft of the femur had become thoroughly organized, being full of Haversian canals continuous with those of the dog bone of which they had become a part, and on fresh sections showed the pink line of living vascular bone.

The intervening portion between these extremities, corresponding to the medullary cavity, showing no attempt at organization, as it was pure white on fresh section, and contained no Haversian canals, but the erosions on its surface clearly indicated that rapid absorption was taking place.

From these experiments they give the following deductions:

1. That where sterilized dead bone is placed, under favorable circumstances,in contact with living bone it undergoes organization.

When, on the other hand, it is acted upon by periosteum, it is absorbed, and when placed in the medullary cavity in not too large bulk, organization combined with absorption takes place.

2. That these processes go on, perhaps, most actively between the fifth and eighth weeks, and are not necessarily associated with any inflammatory action.

3. That therefore, where these dowels are employed to pin together fragments of bones after fracture, to fix the extremities of bones after resections, or for any other mechanical purpose in surgery to which they are adapted, they may be relied upon to do their work for a period of one month or six weeks, and hence to give ample time, as a rule, for union to occur.

After this their presence being no longer required they gradually lose their identity in the surrounding bone and disappear."

As to absorption and organization our experience was identical with the experiences of Drs. Hopkins and Penrose in that the tendency to absorption was much greater when the tooth extended into the marrow cavity, and a tendency to organization where compact bone structure surrounded the teeth, and that absorption proceeded more rapidly in places where the periosteum came into contact with the tooth than when this membrane was absent — in other words, when the teeth came into close proximity to tissues which produce or foster the growth of giant cells or osteoblasts the absorption was greatest, and that organization is most likely to occur when the tooth is fitted only moderately tight into solid bone structure.

Another point bearing on the practicability of the subject is brought out by experiments carried on by Mr. Wm. Scovell Savory in 1864. He demonstrated by a series of experiments performed upon various animals that ivory pegs driven tightly into healthy bone were more quickly absorbed than if the fit were only moderately tight. Our own experiments up to the present would not have brought this point out. But the hint is pertinent and I think should be heeded by those performing the operation in the future.

In the light of our past experiments we can see the following points which tended to make them less successful:

1. The teeth used were young animals and had a very thin growth of cementum on the roots.
2. The teeth were fitted too tightly into the bone.
3. They were completely covered with the skin instead of leaving the crowns protrude.

In the continuation of the work these points can all be noted so as to obtain a greater number of desired results.

From the foregoing we have the following conclusions:

First. From the statistics we conclude that the operation probably has fallen into disrepute either from failure or lack of confidence.

Second. That when teeth are implanted the roots of which are covered with dried periosteum, this membrane must be absorbed before union can take place, and that when union does occur, it is most probably that of ankylosis between vascular cementum and the surrounding bone. In view of this fact, if the operation is to be performed, such teeth should be selected as have a considerable layer of cementum, and should be denuded of the old membrane before being implanted.

Third. That organization of the cementum is most favored when it is so placed in living bone that it impinges — but not tightly — in all its parts upon solid bone, and for this reason the cicatrix of bone formed by that growth which fills the socket after extraction of a tooth, is the most favorable place for the implanting of teeth.

Fourth. That the resorption and rebuilding of the tissues of the body necessitate the absorption of the dentine of the roots of implanted teeth, and thereby their loss. But that as a temporary replacement of lost teeth the operation of implantation is justifiable to those who comprehend it to be such.

NOTES ON METHODS OF INTRODUCING GOLD FILLINGS.

BY JAMES F. COLYER, L.R.C.P., M.R.C.S., L.D.S., LONDON, ENGLAND.

For successful Gold Filling two steps are necessary; firstly, careful preparation of the cavity; and secondly, care in introducing the filling.

The preparation of cavities has been dealt with in a previous paper,* and the present one is intended to deal with that of the introduction of the gold. No attempt has been made to give a detailed account, but rather to review the subject, laying stress upon points which are of special importance.

In the hope of assisting in following the text, several diagrams have been introduced, and patterns of a few instruments have also been included.

At the same time, for the sake purely of description, the subject has been divided and considered under the four headings, viz.:

1. The Cohesive Method.
2. The Non-cohesive Method.
3. Cohesive and Non-cohesive combined.
4. Gold in combination with other metals.

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*See Ohio Journal for January, 1890, page 4.

I. THE COHESIVE METHOD.

This method is more usually adopted than any other, and special instruments are employed for introducing and consolidating the gold in this way.

These consist principally of pluggers and mallets, and it may be found useful to briefly discuss their relative merits before passing on to the actual consideration of the introduction of the gold into the cavity.

To consolidate gold, either hand pressure or mallet force is used ; in the former, the force is given to the plugger direct from the hand of the operator, in the latter, by means of a blow struck by either a hand, automatic, engine, pneumatic, or electric mallet.

Hand Mallet.—The hand mallet, the simplest of all mallets, is made of various materials, and in various shapes, the usual form consists of hard wood filled with lead, this giving a dead steady blow.

This mallet is used either by the operator himself, or by an assistant, the blow delivered on the end of the plugger should have a sharp springing stroke. Many operators claim that the results obtained by the use of a hand mallet are better than even these obtained by the electric mallet.

Automatic Mallet.—Automatic mallets act by the action of a special spring, and some of the modern forms have a back action. Of this class of mallet the favorite forms in this country are those manufactured by Ash and Sons, and Buffalo Dental Manufacturing Co. Of those possessing a back action, Abbot's is the one in general use.

When in use the Automatic mallet should be held like a pen with the end, if possible, resting on a finger of the left hand, thus giving the mallet a point of purchase. The plugger should also be raised a little distance from the surface of the filling, so that each time a blow is delivered it is practically thrust into the gold.

Some place the plugger point on the filling, and then push the mallet, but a great amount of the force of the blow is thus lost.

The Automatic is a fairly serviceable form of mallet, but we should take the precaution to use pluggers whose action will be as far as possible in a direct line with the force of the blow.

Pneumatic Mallets.—In the Pneumatic mallet the necessary force is obtained by pressing with the foot or hand on an air bulb.

The latest improvement in this style of mallet is shown in Fig. 1.

The hand-piece can also be adapted to convey electric mallet pluggers. This instrument is used by placing the bulb on the floor, exerting the pressure with the sole of the foot. A very slight movement of the foot will be required, the blow being regulated by means of the sliding collar A on the hand-piece, and by the amount of pressure applied to the bulb. With this mallet several blows can be obtained in quick succession. The instrument is must useful for condensing retaining points, heavy foils, whether cohesive, or non-cohesive, and for chipping down overhanging edges of enamel with a chisel. It is not therefore a mallet to be advised to those who limit themselves to the use of only one.

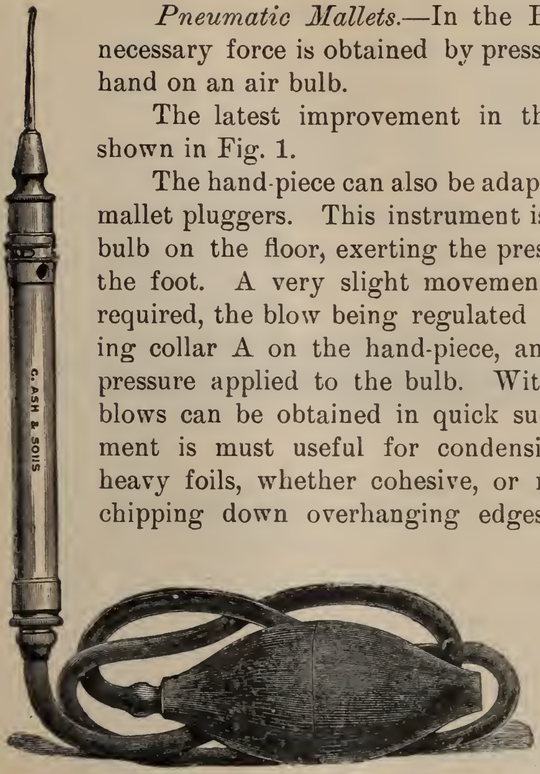


FIG. 1.

Engine Mallets.—Of Engine Mallets, Power's, St. George Elliot's and Bonwill's are the forms generally used. The blow is struck by the action of a cam on a pully driven by the engine, which as it revolves strikes upon the end of the plugger and thus causes a blow.

All these mallets give a varying number of blows dependent upon the speed at which the engine is worked. The disadvantage is that the blow is frequently jerky, but if used with care they are certainly great helps in filling. Power's Mallet is shown in Fig. 2.

Various mechanisms are used to control the blow which is consequently to a great extent under the power of the operator. The method of using them is somewhat similar to that of the electric mallet, and will be referred to later on.

Electric Mallet.—Of all mallets the "Electric" is far and away the best instrument as yet invented for condensing gold. The advantages claimed for this instrument are:

(1) The blow is delivered upon the packing instrument just at the point where its force is greatest.

(2) The force of the blow can at all times be controlled by the operator.

(3) It condenses the gold thoroughly and evenly throughout the filling.

(4) Gold can be impacted against thin frail walls with ease and without fear of fracturing the enamel.

(5) It saves time, and is less fatiguing in its use.

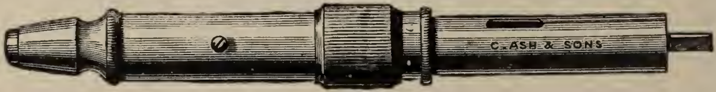


FIG. 2.—Full size.

One of the greatest arguments brought against this mallet is that the battery is constantly getting out of order. This disadvantage has now been overcome by the introduction of accumulators which are stored so as to run for varying lengths of time.

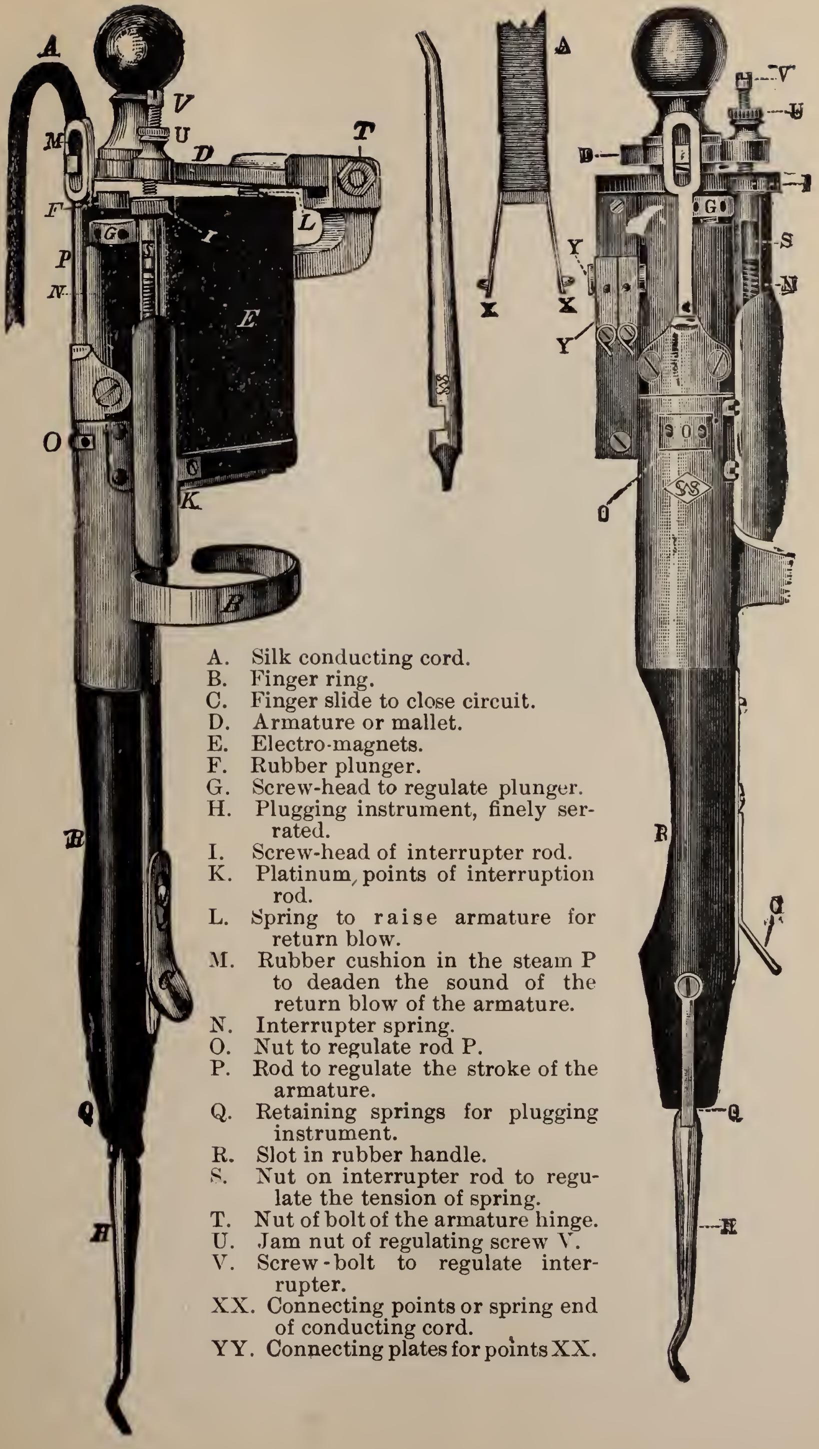
The size in general use runs for about 75 hours before requiring a re-charge, which is soon done at a very moderate cost.

These accumulators are a great advance, and give the electric mallet a still greater charm. An illustration of the instrument is shown in Figs. 3 and 4.

To use it, connect the mallet with the battery by passing the pin XX (Fig. 4) attached to the ends of the spring arms of the silk conducting cord A into the holes of the metal plates at YY, then by gentle pressure with the finger on the slide C, it slips forward and closes the current. The iron cores E, then become converted into electro-magnets and attract the armature D, which strikes the plunger F, the blow being imparted to the plugging instrument H., which is in turn thrust forward, and then returned to position by the springs Q.

The interrupter I, is also struck at the same time and the circuit thus broken at K.

Directly the current is broken the iron cores E, cease to be electro-magnets, so that the armature becomes released, and is forced away by the spring L. This latter action, by releasing the armature D naturally relieves the pressure on the interrupter I, which is carried back into position by the recoil spring N, which surrounds it. Directly it is in position again, the current



A. Silk conducting cord.
B. Finger ring.
C. Finger slide to close circuit.
D. Armature or mallet.
E. Electro-magnets.
F. Rubber plunger.
G. Screw-head to regulate plunger.
H. Plugging instrument, finely serrated.
I. Screw-head of interrupter rod.
K. Platinum points of interruption rod.
L. Spring to raise armature for return blow.
M. Rubber cushion in the steam P to deaden the sound of the return blow of the armature.
N. Interrupter spring.
O. Nut to regulate rod P.
P. Rod to regulate the stroke of the armature.
Q. Retaining springs for plugging instrument.
R. Slot in rubber handle.
S. Nut on interrupter rod to regulate the tension of spring.
T. Nut of bolt of the armature hinge.
U. Jam nut of regulating screw V.
V. Screw-bolt to regulate interrupter.
XX. Connecting points or spring end of conducting cord.
YY. Connecting plates for points XX.

is again closed, the coils E, again assume the position of electro-magnets, the armature is again attracted, etc., etc. The instrument being kept in operation as long as pressure is continued upon the slide C.

The length of stroke of the armature or mallet D, is regulated, and the force of the blow to a certain extent controlled by the nut O, acting upon the rod P, to lessen or shorten the stroke.

The plugging instrument H, which passes through the rubber hand-piece, is controlled by the thumb, through the opening R.

The instrument can be adjusted as follows: Press the instrument H, against the plunger F, regulating F, by the screw nut G, so that when the armature is pressed against the plunger, there is just room enough to pass a piece of thin writing paper between it and the magnets, while at the same time the end of the adjusting screw V, should just perceptibly touch the interrupter head I. The screw when adjusted, is held in position by the jam nut U.

If the screw V, does not strike the interrupter I, as soon as the blow is given to the plunger, the armature will be held down by the magnets, as the current will not be broken. On the other hand, if the adjusting screw V, strikes the interrupter rod I too soon, the circuit is broken before the blow is delivered on the plunger F.

When more or less rapid blows are required, the rod P, should be shortened or lengthened by the nut O.

Should the mallet fail to work, and all attention to above have been paid, the operator should then turn his attention to

(*a*) *The Spiral Spring* surrounding the interrupter, for should this not be properly working, the current cannot be closed.

(*b*) *To the Platinum points at K*, or should any substance have been caught between them, the circuit will be naturally destroyed, hence it is a good plan to pass a knife-blade between occasionally.

(*c*) *Connection cord*, the ends attached to the battery may have become loose, or oxidized—or the conducting cord may have broken.

(*d*) Failing the above attention must be bestowed on the battery, which may have been exhausted.

It is needless to say that every one who uses the mallet should thoroughly understand its mechanism. Cohesive gold should always be used with it.*

In commencing the filling one or two pieces of foil should be placed in the retaining point of the cavity with the instrument by hand, as each piece of gold is passed over the flame of alcohol, and introduced into the cavity (either by an assistant with light pointed foil carriers, or by the operator himself with the packing instrument), and simply attached to the starting point or that already there, the electro-magnetic mallet should be set in operation, and the finely serrated point of the packing instrument

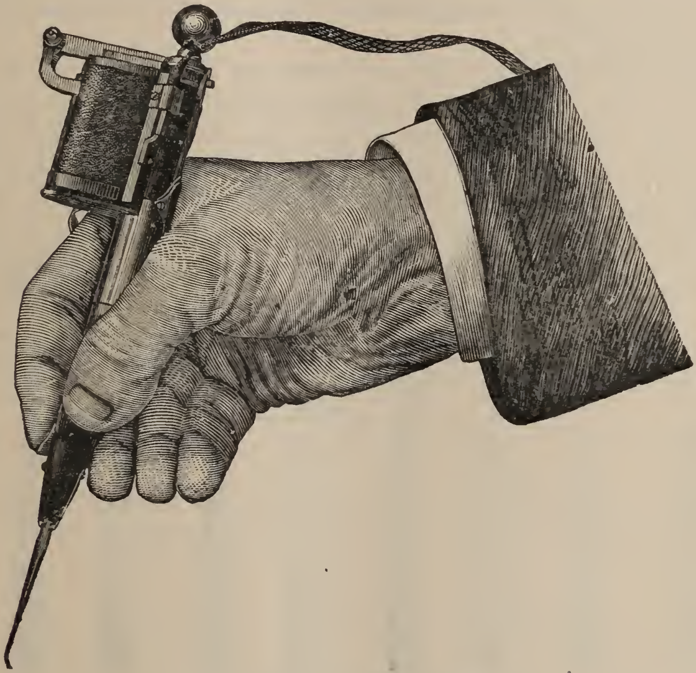


FIG. 5.—Method of holding the mallet.

touched upon or placed (not pressed) against the gold in a manner similar to that of making dots on paper with a pencil. Light, medium, or hard blows can be made without changing the adjustment of the instrument, as full or heavy lines are made on paper with a pen. When the electro-magnetic mallet is operated and guided as indicated above, gold can be carried against and over the margins (even frail edges) of enamel without fracturing them, and without the packing instrument passing off and puncturing the rubber-dam and wounding tissue. Almost the same blow is required throughout each and every operation, because the gold should be solid and uniform in density, hence the action of the battery must always be about the same in intensity and constancy, and the pieces of gold for a given operation ought to be nearly the same size; all foil should be cohesive, by passing through the flame.

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* The following description of the method of using the Electric Mallet is condensed from Marshall Webb's Operative Dentistry.

The successive and rapid recurrence of the blows, enables an operator, with careful and intelligent guidance of the instrument to go over the whole surface of the foil much better, and make the gold more solid and uniform in density with greater ease and rapidity than by any other known method.

This is true of the work of the electro-magnetic mallet, because to expel the air from between the particles of foil and

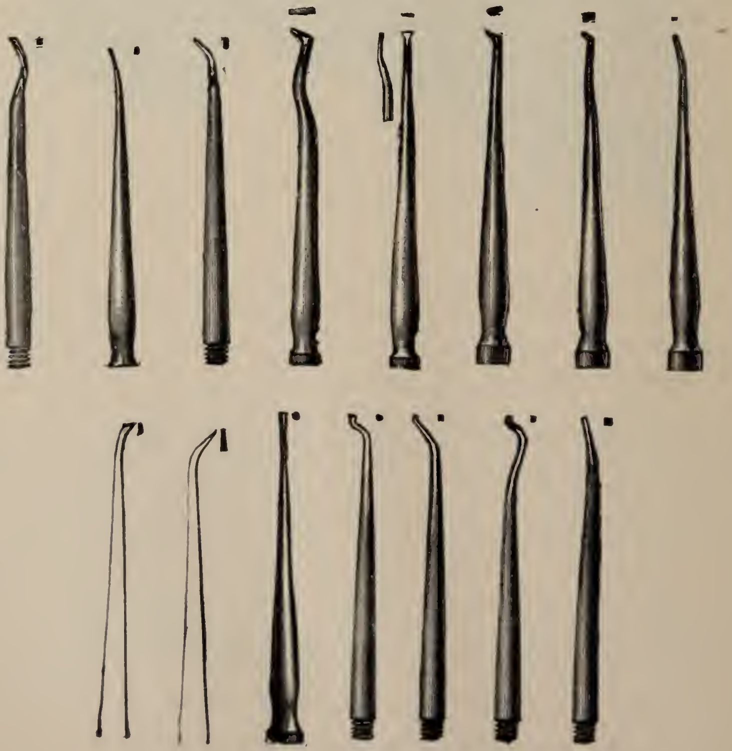

Fig. 6.

place them in absolute contact in every given piece or body of gold, or, in other words to place all the cohesive particles within the "sphere of influence" of one another, a certain number of blows of given force are necessary; and to thus go over the whole of each piece being impacted by any other known method would require the expenditure of more time and greater effort. That gold may be made compact it is not so desirable that a heavy blow be struck, as it is necessary that rapid, regular and moderately heavy blows be skillfully given to each piece of foil. By no other method can this be done so well and so perfectly as with the electro-magnetic mallet.

With regard to pluggers, the patterns one finds most useful for the Electric Mallet are shown in Fig. 6.

The same set can also be used with either the pneumatic or the Bonwill Engine mallets.

For use with automatic mallets, pluggers with rather a coarser cut may be advantageously used.

For hand pressure the instruments known as Mr. Woodhouse's set, will probably be found the most useful.

(To be continued.)

TREATMENT OF ADENOID ENLARGEMENT AND HYPERTROPHY OF THE ORAL TISSUES.

BY CHAS. B. ATKINSON, D.D.S., NEW YORK.

In adenoid enlargement and hypertrophy of the oral tissues, local stimulation and compression are indicated with systemic tonization usually assisted by catharsis and alterative treatment. The local treatment in both of its phases may be chiefly secured through the use of a saturated solution of salicylic acid in alcohol, 95%. This remedy should be *carefully* applied after drying the diseased surfaces with bibulous paper to prevent the spread of the medicine, owing to the affinity of the vehicle—alcohol—for the water ever present in the tissues. Increased advantage may be secured by using *blue* pyoktanin powder on the swab dipped in the salicylic acid solution. This absolutely suppresses any tendency to suppuration which often occurs in these congested surfaces.

It will be proper to state here that the pyoktanin is a terrible thing to stain, and that tartaric acid for the face and mouth and muriatic acid diluted (10% solution) for the hands and tougher skin surfaces will remove the stain. Care in its use will obviate much call for decolorants. In using both the blue and yellow pyoktanin it will be found that salicylic acid solution localizes the action of the pyoktanin and prevents the spread of the color, which, when applied pure, is great, owing to the extreme solubility of the pyoktanin in the fluids of the mouth. Further local treatment will call for tannic acid paste which will be considered further on.

The salicylic acid solution may be repeated *daily* if care be exercised to prevent breaking the coagulated surface. In case the continuity of the coagulum be broken, the raw spot or spots should be carefully dried and a *light* application of the salicylic acid solution be made. This may be of reduced strength if circumstances demand it. The reduction may be secured by adding known quantities of alcohol to produce the desired dilution. However, the saturated solution will be found to fulfill almost every possible condition presenting.

The salicylic acid treatment should be alternated (in the second week usually) with a paste of tannic acid in glycerine, made as thick as possible. Where the eschar develops a tendency to easily separate and to prematurely expose the new surface in active growth, the tannic paste is indicated to toughen both the eschar and the granulating surface beneath it. The application of the tannic paste should gradually take the place of the salicylic solution.

As the case progresses and the enlarged tissue is seen to reduce, the applications may be made at longer intervals, from two or three per day to once, then every other day, twice a week, weekly, and fortnightly, by which time most cases will be cured. Some will yield in two weeks, some require a year for the complete removal of the adenoid enlargement and the tendency to its recurrence. The systemic treatment should embrace the exhibition of tonics:

℞	Cinchonidinæ	-	℥ ss.
	Acid sulph. arom.	-	℥ ij.
	Alcohol 95%	-	℥ iij.
	Glycerine C. P.	-	℥ ij.
	Aquæ dest. q.s. ad.		℥ xv.

M. Sig. One teaspoonful ter die—

and cathartics:

℞ 10 McKesson & Robbins
U. S. P. cathartic pill.
Sig. One on retiring as required.

And in extensive cases an alterative may be needed in addition:

℞	Potass. iod. - - - - -	ʒ j.
	Aquæ dest. - - - - -	℥ vj.

M. Sig. Two tablespoonfuls ter die.

Further systemic indications are spare use of wines and alcoholic beverages. Malt liquors may be used in moderation. Starch should be avoided. Sugar may be used freely and salt plentifully.

The constant exhibition of an antiseptic mouth-wash is of value in any treatment of the mouth and teeth:

℞	Hydronapthol - - - -	ʒ ss.
	Tinct. calendulæ - - -	ʒ iv.
	Aquæ dest. q.s. ad. - - -	℥ viij.

M. Sig. Use freely of the clear solution, without shaking, as a mouth-wash.

In case mucous surfaces in contact should need treatment, a fold of bibulous paper smeared with vaseline or the tannic acid paste will be found an efficient agent in preventing adhesion of the contiguous surfaces and the consequent breaking loose of the eschar which is always an unfortunate accident, giving rise to much discomfort to the patient and prolonging treatment considerably.

The line of treatment as described is especially indicated in the numerous cases which present with passive congestion of the gingivæ, owing to the presence of non-conducting and ill-fitting dentures, which condition is a prelude many times to a chronic adenoid enlargement not at all easy to subdue. In such cases the construction of a new denture should be deferred until the enlarged surfaces are reduced to normal condition.

The place of the reduced tissue being supplied to the old denture with hard or "sticky" wax added from time to time as the increased space requires. The waxed surface should be smeared with the tannic acid paste before placing in the mouth.

To Dr. W. H. Atkinson belongs the credit of introducing the salicylic acid solution and the tannic acid paste for the treatment of these cases.

PEROXIDE OF HYDROGEN AND OZONE.[*]
THEIR ANTISEPTIC PROPERTIES.

BY PAUL GIBIER, DIRECTOR OF THE PASTEUR INSITUTE OF NEW YORK.

Since the discovery of Peroxide of Hydrogen by Thenard, in 1818, the therapeutical application of this oxygenated compound seems to have been neglected both by the medical and the surgical professions; and it is only in the last twenty years that a few bacteriologists have demonstrated the germicidal potency of this chemical.

Among the most elaborate reports on the use of this compound may be mentioned those of Paul Bert and Regnard, Baldy, Péan and Larrivé.

Dr. Miguel places Peroxide of Hydrogen at the head of a long list of antiseptics, and close to the silver salts.

Dr. Bouchut has demonstrated the antiseptic action of Peroxide of Hydrogen, when applied to diphtheritic exudations.

Prof. Nocart, of Alfort, attenuates the virulence of the symptomatic microbe of carbuncle, before he destroys it, by using the same antiseptic.

Dr. E. R. Squibb,[†] of Brooklyn, has also reported the satisfactory results which he obtained with Peroxide of Hydrogen in the treatment of infectious diseases.

Although the above mentioned scientists have demonstrated by their experiments that Peroxide of Hydrogen is one of the most powerful destroyers of pathogenic microbes, its use in therapeutics has not been as extensive as it deserves to be.

In my opinion the reason for its not being in universal use is the difficulty of procuring it free from hurtful impurities. Another objection is the unstapleness of the compound, which gives off nascent oxygen when brought in contact with organic substances.[‡]

Besides the foregoing objections the surgical instruments decompose the peroxide, hence, if an operation is to be performed, the surgeon uses some other antiseptic during the procedure, and is apt to continue the application of the same antiseptic in the subsequent dressings.

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[*] Read before the International Medical Congress. held at Berlin, Germany. August, 1890.

[†] *Gaillard's Medical Journal*, March, 1889.

[‡] The Peroxide of Hydrogen that I use is manufactured by Mr. Charles Marchand, of New York. This preparation is remarkable for its uniformity in strength, purity and stability.

Nevertheless, the satisfactory results which I have obtained at the Pasteur Institute of New York with Peroxide of Hydrogen, in the treatment of wounds resulting from deep bites, and those which I have observed at the French clinic of New York, in the treatment of phagedenic chancres, varicose ulcers, parisitic diseases of the skin, and also in the treatment of other affections caused by germs, justify me in adding my statement as to the value of the drug.

But, it is not from a clinical standpoint that I now direct attention to the antiseptic qualities of Peroxide of Hydrogen. What I now wish is merely to give a full report of the experiments which I have made on the effects of Peroxide of Hydrogen upon cultures of the following species of pathogenic microbes: Bacillus anthracis, bacillus pyocyaneous, the bacilla of typhoid fever, of Asiatic cholera, and of yellow fever, streptococcus pyogenes, micro-bacillus prodigiosus, bacillus megaterium, and the bacillus of osteomyelitis.

The Peroxide of Hydrogen which I used was a 3.2% solution, yielding fifteen times its volume of Oxygen; but its strength was reduced to about 1.5%, corresponding to about eight volumes of Oxygen, by adding the fresh culture containing the microbe upon which I was experimenting. I have also experimented upon old cultures loaded with a large number of the spores of the bacillus anthracis. In all cases my experiments were made with a few cubic centimetres of culture in sterilized test-tubes, in order to obtain accurate results.

The destructive properties of Peroxide of Hydrogen, even diluted in the above proportion, is almost instantaneous. After a contact of a few minutes, I have tried to cultivate the microbes which were submitted to the peroxide, but unsuccessfully, owing to the fact that the germs had been completely destroyed.

My next experiments were made on the hydrophobic virus in the following manner:

I mixed with stirilized water a small quantity of the medulla taken from a rabbit that had died of hydrophobia, and to this mixture added a small quantity of Peroxide of Hydrogen. Abundant effervescence took place, and, as soon as it ceased, having previously trephined a rabbit, I injected a large dose of the mixture under the dura mater. Slight effervescence immediately took place and lasted a few moments, but the animal was not more disturbed than when an injection of the ordinary virus is given. The rabbit is still alive, two months after the inoculation.

A second rabbit was inoculated with the same hydrophobic virus which had not been submitted to the action of the peroxide, and this animal died at the expiration of the eleventh day with the symptoms of hydrophobia.

I am now experimenting in the same manner upon the bacillus tuberculosis, and if I am not deceived in my expectation, I will be able to impart to the profession some interesting results.

It is worthy of notice that water charged, under pressure, with fifteen times its volume of pure oxygen has not the antiseptic properties of Peroxide of Hydrogen. This is due to the fact that when the peroxide is decomposed nascent oxygen separates in that most active and potent of its conditions next to the condition, or allotropic form, known as "Ozone." Therefore it is not illogical to conclude that ozone is the active element of Peroxide of Hydrogen.

Although Peroxide of Hydrogen decomposes rapidly in the presence of organic substances, I have observed that its decomposition is checked to some extent by the addition of a sufficient quantity of glycerin; such a mixture, however, cannot be kept for a long time, owing to the slow but constant formation of secondary products, having irritating properties.

Before concluding I wish to call attention to a new oxygenated compound, or rather ozonated compound, which has recently been discovered and called "Glycozone" by Mr. Marchand.

This Glycozone results from the reaction which takes place when glycerin is exposed to the action of ozone under pressure—one volume of glycerin with fifteen volumes of ozone produces Glycozone.

By submitting the bacillus anthracis, pyocyaneous, prodigioses, and megaterium to the action of Glycozone, they are almost immediately destroyed.

I have observed that the action of Glycozone upon the typhoid fever bacillus, and some other germs, is much slower than the influence of Peroxide of Hydrogen.

In the dressing of wounds ulcers, etc., the antiseptic influence of Glycozone is rather slow if compared with that of Peroxide of Hydrogen, with which it may however, be mixed at the time of using.

It has been demonstrated in Pasteur's laboratory that glycerin has no appreciable antiseptic influence upon the virus of hydrophobia : therefore, I mixed the virus of hydrophobia with glycerin, and at the expiration of several weeks all the animals which I inoculated with this mixture died with the symptoms of hydrophobia.

On the contrary, when glycerin has been combined with ozone to form Glycozone, the compound destroys the hydrophobic virus almost instantaneously.

Two months ago, a rabbit was inoculated with the hydrophobic virus, which had been submitted to the action of this new compound, and the animal is still alive.

I believe that the practitioner will meet with very satisfactory results with the use of Peroxide of Hydrogen for the following reasons:

1. This chemical seems to have no injurious effect upon animal cells.

2. It has a very energetic destructive action upon vegetable cells—microbes.

3. It has no toxic properties; five cubic centimetres injected beneath the skin of a guinea-pig do not produce any serious result, and it is also harmless when given by the mouth.

As an immediate conclusion resulting from my experiments, my opinion is, that Peroxide of Hydrogen should be used in the treatment of diseases caused by germs, if the microbian element is directly accessible; and it is particularly useful in the treatment of infectious diseases of the throat and mouth.

Prosthetic Dentistry.

[This department will be devoted exclusively to Prosthetic Dentistry, including Crown and Bridge-Work. We shall be pleased to receive from our readers such practical contributions, short items or queries upon this subject as they choose to contribute.]

NEEDED CHANGES IN TEETH.

BY PROF. L. P. HASKELL, CHICAGO.

It is strange how few dentists seem to realize the need of changes in porcelain teeth. Take for example the bicuspids and molars of one of the leading manufacturers. It is impossible to arrange a full upper and lower set without grinding the *lingual* cusps of either the upper or lower, and sometimes both, they are so much longer than the buccal cusps. In the upper, at least, the lingual cusps should be the shortest, but in reality it would be better that there were very little difference in the length of either upper or lower, lingual or buccal. In this respect the English teeth are preferable.

Another very serious objection in many teeth is found in the placing of the pins *so near the cusp* that it cannot be shortened without grinding it all, or nearly all, away. Not only this, but it brings the rubber so near the end of the tooth that it has an unsightly look. There is no reason whatever for this for the pins could in *all* cases be placed near the middle of the tooth. There is no need of the long concave blank space below the pins, just as if the maker supposed the tooth should lap upon the alveolar ridge all that distance.

Why cannot dentists who appreciate these suggestions express their sentiments to the manufacturers and not continue year after year to be compelled to use such deformities? These suggestions are in reference to *plain rubber teeth*, and there is room for improvement in them in all the makes of teeth.

Mr. Editor:—Dr. Genese says in the Dec. Journal, "I have used Babbitt metal from its first introduction, obtained from

Babbitt's London house, who made it before it was sent here to America, and have some still on hand." The original Babbitt formula, which we commenced with 40 years ago, did not work satisfactorily and we abandoned it. There are many formulas for this metal, but for dental dies they are not all suitable. With regard to the statement that it can be hammered out of shape *as easily as tin*, it must be a queer Babbitt which he has. I have only to say that in ordinary cases I seldom make the second die, for its shape is affected by swaging only in some cases. If Dr. G. will make some Babbitt metal from the following formula and use it, I am confident he will say, as multitudes of others have, "I have no further use for zinc."

Copper - -	1 part.
Antimony - -	2 parts.
Tin - - -	8 parts.

Be sure to melt in the order named to avoid oxidation of tin. Remember that for a counter die tin must be added to the lead, 5 parts lead, 1 part tin.

L. P. HASKELL.

"ENAMEL" IN DENTISTRY.

IN a paper designed principally to explain a method of making porcelain-front crowns, read at the last meeting of the American Dental Association, I mentioned the use and possibilities of "enamel" in prosthetic dentistry. Not *tooth* enamel, or *gum* enamel, but a material that is known and used by jewelers and enamelers under the name of "hard enamel"; an easily fusible silicate or glass, to which the desired color and opacity is imparted by metallic oxides.

Enamels have been used in decorative art from very early times, more particularly in the manufacture of jewelry. For years it has formed the base of nearly all watch and clock dials, and now that methods have become perfected by which it can be attached to iron, it is extensively used in the manufacture of water-pipes, porcelain-lined kettles, and a variety of utensils known as "granite-ware," where its strength, resistance and durability have withstood the severest tests.

Although having in mind for sometime its probable usefulness for filling interspaces and more firmly uniting porcelain to metal in crown and metal-plate work, I had not subjected it to a practical examination until a short time before the meeting, and then, principally, in the construction of the models which I there presented for examination.

These exhibited the enamel fused upon 18 carat gold, upon porcelain teeth, between backing and tooth and all joints of porcelain and metal in the 10 or 12 models of crowns constructed to illustrate my paper.

Since my return I have had the fortune to use it in the construction of 6 crowns, 2 partial bridges (one of 8 teeth) and a partial set of teeth on gold, and I am so pleased with its practical application and the desirable possibilities it foreshadows, I believe the prediction not a wild one when I say it is destined to revolutionize the present method of attaching porcelain teeth to metal in all artificial dentures.

While its staying quality has not yet been subjected to the crucial test of time, the very nature of the substance—glass—tells us it can no more be attacked by the fluids of the mouth than the porcelain of artificial teeth; and where it is fused between and protected by otherwise immovable joints, it can but stand as an impervious stopping to the ingress of decomposable substances which have rendered this class of dentures unwholesome and oftentimes filthy in the mouth. As a matter of no small importance also, the vitrified enamel clinging with great tenacity to both metal and porcelain, the artificial tooth or face is supported by a far stronger attachment than when held—as it often otherwise must be—by the pins alone. When fused between joints of gum plate teeth, filling the interstices between the plate and tooth, uniting the whole as in continuous gum dentures, and wherever porcelain has heretofore been held mechanically against metallic surfaces, greater solidity and perfection in all operations of this class must necessarily result.

The enamel may be obtained for dental purposes from jewelry supply-houses under the name of "white-hard enamel," or by breaking it from the face of an old watch-dial. In either case it should be ground in a mortar to an impalpable powder, so that when mixed with water to the consistency of cream and laid over a crevice with a camels-hair pencil, it will penetrate into the smallest interstices by lightly tapping the piece. This operation should be continued, occasionally drying the excess of moisture, until the interspaces are entirely filled with the dry condensed powder.

The teeth may now be invested and the piece brought to the required heat for fusing the enamel under the blow-pipe. As the heat requisite for this purpose is far below the fusing point of any of the hard solders there will be no danger of melting the metal. A more satisfactory and uniform result, however, can be obtained —without investment—in a continuous-gum furnace. For this purpose I can most heartily recommend "The Parker Improved Gas Furnace."

Where the enamel is out of sight, a small quantity should be laid upon an extra piece of metal alongside, for a guide as to its fusion; the heat being stopped as soon as the surface of the sample is glassed. Where an unusual quantity has been used to fill wide interspaces, the contraction of the material will often necessitate a second filling and fusing.

For crowns, before grinding, I fit platinum backing a trifle large for the face, bend the pins to hold it, and lute with enamel; the extended edges of the backing form a convenient place upon which to lay the material while tapping it to place. (It is hoped that operators will be relieved from this part of the operation by manufacturers). Other joints between porcelain and metal may be luted before or after completion of the crown.

In the case of the partial denture mentioned above, the patient had lost the second superior bicuspids and molars with considerable absorption of tissue. Under ordinary circumstances, this would have been artificially restored with plain teeth and pink rubber-gum attachment—the old method of gold solder cases having long ago rightfully gone to the wall on account of its unhygienic influences. In this case, however, gum plate teeth were selected, backed, fitted and soldered to plate, with a neatly fitted rim along the buccal edges of gums. Then the piece was boiled for sometime in dilute acid to remove every trace of borax, then in a strong alkali and thoroughly cleansed. (The alkali cleansing process, by the way, is considered by metal enamelers quite indespensable to the perfect attachment of the enamel). All of the joints were then tapped full of the moistened enamel powder and the plate, resting upon a plaster and asbestos vase, was slowly brought to the required heat for fusing; one firing was sufficient in this instance; every joint being filled perfectly with the hard vitrified enamel. The denture when finished possessed every indication of being far more durable, and as free from the possibility of decomposing materials finding lodgment, as if constructed by the continuous-gum process.

If this prove true, the kind of gold work which was so durable and beautiful—though long discarded may again be restored to its pristine glory.—Dr. Calvin S. Case, *Archives.*

DIRECTIONS FOR WORKING ALUMINUM.

The following directions are given by the Scovill Mfg. Co., Waterbury, Conn.:

A cubic inch of pure aluminum weighs approximately one-tenth of a pound avoirdupois, being about one-fourth the weight of an equal bulk of pure silver.

Pure aluminum can be rolled, drawn, spun, stamped, engraved, burnished, polished and soldered to the same extent and by the same processes as used on brass, with the following exceptions:

Annealing.—A very low and even temperature should be maintained in the muffle. Aluminum melts at about 1,300° Fahrenheit—a very dark red. The inexperienced, therefore, cannot judge the proper annealing temperature by the eye alone, without danger of fusing the metal. When the metal has been heated enough to char the end of a pine stick, thus leaving a black mark in the wake of the stick, as it is drawn across the metal, it is sufficiently annealed. The metal should then be withdrawn from the furnace and allowed to cool slowly in the air. For some work, such as stamping and drawing, it is sometimes better not to heat the metal so hot as to leave a dead black mark with the stick, but just enough to show a dark brown mark instead. Very thin sheets or wire can be annealed sufficiently for some purposes in boiling water.

Dipping and Pickling.—Remove the grease and dirt by dipping in benzine. To whiten aluminum, leaving on the surface a beautiful white matte, dip first in a strong, hot solution of potash, then rinse in water, and dip in undiluted nitric acid, 42°. Then wash in water, and dry as usual in hot sawdust.

Polishing.—Use fine white polishing composition or rouge, and a rag buff.

Burnishing.—Use a bloodstone or steel burnisher. For hand burnishing use either kerosene oil or a solution composed of two tablespoonfuls of ground borax dissolved in about a quart of hot water, with a few drops of ammonia added.

For lathe work the burnisher should wear upon the finger of his left hand a piece of Canton flannel, keeping it soaked with kerosene, and bringing it in contact with the metal, supplying a constant lubricant.

Very fine effects can be produced by first burnishing or polishing the metal and then stamping it in polished dies, showing unpolished figures in relief.

Scratch Brushing.—Polish or burnish the surface, and then use a fine steel scratch brush.

Soldering.—A special solder is necessary. Cleanse the metal from grease and dirt. Use for soldering fluid Venetian turpentine, and heat gently in a blow-pipe until the solder is melted. It will then be found to have fixed itself firmly to the aluminum.

Sand Castings.—Use open but very fine sand, and bake the mould. Large feeding gates should be provided, and the mould should be well vented. Pour the metal quickly, at a temperature but little above the melting point. Use either Taylor's or Dixon's plumbago crucibles.

Milling, Planing, and Turning.—Use plenty of oil to prevent the clogging of the tool and to make it cut smooth.

MAKING GOLD CAP-CROWNS WITHOUT DIES.

The shape of the inner edge of the band, and the approximate length, having been determined, the band is cut slightly wider than will be needed. I make the bands of pure gold plate about 27 gauge. When annealed, this metal will be found almost as soft as lead. It may be readily wrapped about the tooth.

After bending the ends at right angles so that they do not quite meet on the palatal side of the tooth, with a pair of serrated pliers the two ends are grasped, and by closing the pliers the ends of the band are drawn together closely, and a tight-fitting band is the result. In soldering, the ends should lap for reasons which will be given. The band when soldered is placed over the tooth, and an examination on the inside will show whether the work has been skillfully done. If not, it should be unsoldered and refitted. The band should be moderately tight, without going under the gum at all. During the subsequent work it should never be pressed up with any force, because the soft gold will stretch, resulting in a loose-fitting crown. If care is taken in this direction, when the crown is ready for final setting it may be pressed up until the band just passes beneath the free margin of the gum, when it will be found to fit very tightly.

With the band in position the patient is directed to close the mouth, and the points in contact during occlusion are noted and trimmed away until the band *represents the full height which the crown must assume.* The next thing is to produce close contact with the adjacent teeth. This is accomplished with a pair of pliers, one nose being placed within the band, the other resting on the far side of the adjacent natural tooth. By pressure the band is made to adapt itself to the surface next to it.

The band is now removed and laid on the bracket. Take a piece of thin platinum and lay it over the upper edge; place the ball of the thumb on the platinum and press it gently but firmly down upon the band. This will give an impression on the platinum of the circumference of the band. The included disk of platinum being carefully cut out, on the line, will accurately fit into the band, and will have a concave surface produced by the ball of the thumb. A small hole should be punched in the platinum. Next take the band in the fingers, place the platinum in position, hold the two between the thumb and forefinger, and with gentle pressure the platinum will be forced into the band. The piece is then invested, and when the investment is hardened a drill-hole is to be made in it through the little hole in the platinum; through this is pressed a platinum post of diameter just large enough to bind as it passes through the platinum plate. *Pure gold* is flowed on this surface until a high convex form is assumed. This is why the band was directed to be lapped, in order that the heat should not affect the solder.

It is next placed in the mouth and ground to an occlusion, when it is carved into proper shape with engine-burs, and polished.

Before the final setting, the post which extends through the crown is to be bent into a loop. In an upper molar a single post in the palatal root will be quite sufficient for all purposes.

In an ordinary case a crown of this kind can be completed in about one hour. Difficulties in fitting the band would lengthen the time needed.

The main advantage of this crown over one which is struck, is that it may be used in "short-bite" cases.—Dr. R. Ottolengui, *Cos.*

HOW TO HAVE CLEAN JOINTS IN GUM TEETH.

To make this a success follow closely the plan from beginning to end, as success only can be obtained by it, by doing so. Grind your joint in any way you are accustomed to, and "wax up" carefully, taking pains not to be-smear your blocks on the outside with wax or dirt. Cleanliness is invaluable. After waxing, put the case in cold water, and, after getting cold, trim your wax on the front as nicely as you would your rubber. Invest your case deeply in the flask, bring your plaster completely up to the top of the wax (rather above than below). *This will leave only the blocks above the plaster on the outside.* When you separate your flask, you will find you can easily get at the front of the blocks, or rather that portion which your rubber will come in contact with. Mix plaster for your joints *very thin* and plaster the joints, and then go all along the front of the blocks, especially at the joints, and flow the plaster in between the joints and plaster. This makes it utterly impossible for rubber to run down the front of the joints, and it is there that it is always found, as every dentist knows. Cut waste gates at the back of the cast *only—never*, under any circumstances, in the front. Pack in any way you are accustomed to, and warm your flask, screw the front of the flask down first, and force all surplus rubber out at the back. I am *positive* that any one, who will follow the foregoing plan, will have clean joints. Remember, the whole system must be followed, and each step will explain itself, if practised. By forcing the surplus backward, it is not forced *against*, but *away from* the blocks, and does not break them. With plain teeth and pink rubber in front, the red or black rubber of the palate portion is not forced to follow the pink in its escape into the waste gates, leaving that unsightly gum, which we see so often, with a spot of dark rubber at every step where the waste gates were.—Dr. C. H. Dunning, *Items*.

INSTRUCTING PUPILS.

It is always well to have your pupil with you when you take bites and impressions and fit in cases. He will then learn that which cannot be taught with the same nicety in a hospital. And let him understand that anything will not do to take a bite, and that it should give the necessary fulness to the face, and at the same time the true centre of the mouth. To teach a pupil to take impressions and to get him used to handling of composition, a good way is to let him take casts of the front teeth when the jaws are closed, press the tray firmly over the front teeth, and then ask the patient to open the mouth, and you will have an impression that will show the exact position of the bite when closed, and at the same time give a clear and undragged cast· This will make him clearly understand that however regular the teeth may seem to the casual observer, there is always that little irregularity that serves to give the natural expression. These models are also very useful to keep, as you can always say to your pupil, "I want a set of teeth set up similar to this model." This at once gives him a definite notion of what you want him to carry out, and is far better than letting him set up teeth to his own idea. I take one of all my regular patients, and find they greatly assist me, when after a time the patients require artificial teeth, in restoring the natural appearance.—Dr. Coxon, *Jour. Brit. Asso.*

BRIDGE-WORK.

I esteem bridge-work, properly designed, so as to secure neatness, lightness and strength, in the hands of a truly artistic dentist, as the most advanced method of supplying partial dentures. In every case where teeth are lost and there are good adjoining teeth, I would prefer to put in a permanent bridge to supply the loss, anchored and hermetically sealed with cement. Always allow it to bear upon the gums, where you have to put a blank tooth, where a root is gone. The indication would be to have it press directly upon the gum, so that when the occlusion in the bite was attained, it would not be painful; and even if it were a little uncomfortable for a day or two, I would not regret it.

No appreciable proportion of the cases requiring bridges indicates movable bridges in preference to fast bridges, and movable bridges, in my estimation, are rather a criticism upon the artistic ability of the operator to construct a fast bridge, properly fastened, for the case.

I do not approve of a plate being constructed in any case other than an edentulous one, further than the plate requisite to hold the fixture of artificial substitutes permanently together in bridging.—Dr. W. H. Atkinson, *Sou. Society, So. Dent. Jour.*

DENTAL DOTS.

A BRASS wire coiled spring, similar to a mattress spring, loosely fitted inside your vulcanizer, is a handy thing to keep the flasks out of the water while vulcanizing.

In repairing cases two, or even three pieces, can be put in one flask without packing, to save time. From six to nine cases can be put into a three-flask vulcanizer, and all done without the trouble and inconvenience of waxing up the machine. Sometimes a partial case can be made from beginning to end without the trouble of waxing up, etc., in the same way.

Rubber files can be made to do good service after being thrown by as useless. Put them in the fire till red hot all over, drop them end first into a pail of water, dry them and brush them with a file cleaner or stiff brush.—DR. D. V. BEACOCK, *Do. Dent. Jour.*

CARE IN PLACING GOLD BANDS.

IN placing gold collars upon the roots of teeth, great care should be taken not to drive them too far. Not only is the pain very sharp when the investing membrane is cut by the edges of the collar, but the tooth which was to have been saved by the crown may be lost through the means used to save it. I have seen a few cases where the roots have entirely lost their attachment, and becoming loose, have been lost to the patient from no other apparent cause than the cutting and subsequent irritation of the edges of the collars. And in this connection I wish to lay special stress upon the fact, too often overlooked by us, that it is easier to create a destructive action than to control it.—DR. R. M. SANGER, *Dent. Mirror.*

WHY keep the ends of your fingers sore sand-papering rubber plates? Just dress down the proper thickness with files and scrapers; then adjust a large cork on your lathe, and run pumice on it. You can finish much better in half the time.—ERNEST MURRAY, *Items.*

A STRONG BASE-PLATE MATERIAL for use in setting up sets to try in, can be made by soaking "Paper Fibre Lint" in Stearine just at the melting point. It is important not to have the Stearine too hot, as otherwise too much of the fat runs out of the paper when it is taken out to cool. This should be cut to the required size, warmed and pressed on the model, and then the teeth fixed to this with wax.—*Off. and Lab.*

Impressions of the mouth for full or partial dentures should always be taken in plaster. Where difficulties arise, as they often do in partial cases, Dr. Angles' plan is unique in its simplicity, viz., oil the impression cup before pouring the plaster, in order to facilitate the removal of the former from the latter; then divide the outer portion of the impression into three pieces, when the whole can be easily removed and replaced in the cup.—*Archives.*

Editors' Specials.

"Write the Vision and make it plain."

PEROXIDE OF HYDROGEN.

Though this agent has come rapidly into use, its merits will justify a still more extensive and more general adoption in practice. It should be prepared with the greatest care and skill. It is one of the unstable chemical compounds, and it is worthy of a passing thought as to why it is so unstable. There is no lack of strength in the affinity of its elements for each other. A stronger affinity, *per se*, does not exist in the range of chemical activities. The one stands at the extreme limits of electro-positive elements, beyond the metals, if not itself a metal, and the other at the extreme limit of electro-negative elements.

At first thought we would suspect it would be extremely stable—hard to decompose. But we must bear in mind that the normal condition of both elements is gaseous. They seem, as it were, to be anxious to assume this free state when imprisoned in any compound. This is an illustration of what is meant when it is stated that elasticity is one of the circumstances that modify affinity. But quantity of matter is another of these modifying circumstances. The elements of this compound are capable of uniting in different proportions. They combine in the proportions of 2 parts of hydrogen to 16 of oxygen, to form water, a well known and rather stable compound, its formula being H_2O. But to get the agent in consideration, we must have combined with the 2 parts of hydrogen 32 parts of oxygen, its formula being H_2O_2. It is hard to combine the second equivalents.

In contact with oxidizable organic matter it appears to be decomposed. It destroys pus rapidly, the oxygen probably uniting with some one or more of the constituents of the pus, while the hydrogen escapes as gas, causing the appearance of bubbling, which is always observed when placed in contact with purulent surfaces. Some have objected to this explanation of its mode of action claiming that the bubbling is caused, in part at least, by the escape of oxygen. It is possible that the decomposition is so rapid that both elements escape at the same time; but still we think that the first explains the leading action in the process. If we had the manipulative ability of former times it would take but a few minutes to test the *modus operandi* of the process.

When it is important to have any surface free from pus, this agent is invaluable. A report of a case may give light here. It may be known to the reader that in the chronic stages of locomotor ataxia, the surface of the body is sometimes studded with abscesses, ulcers, boils, carbuncles, etc. We believe when one wishes to enjoy his own talk, he classifies them as "solutions of continuity." In one case we saw an ulcer near the middle of the tibia, about the size of a silver dollar. The margins were much indurated and thickened, and the bone was destroyed to the depth of a third of an inch. A very offensive, ichorous pus covered the surface. It remained an open ulcer more than a year, under varied treatment. Finally the pus was removed once a day with the peroxide, and a mild ointment of preiodide of mercury was as often applied to the indurated margins. The indurations rapidly softened down, and healthy granulations sprung up, and in twelve days the ulcer was entirely healed, and it so remains.

Fistulous pus canals, sinuses, and pus pockets invite the peroxide as the leading element in their treatment. It kills and retrieves. Rats have quite as good times with terriers as microbes have with the peroxide. It readily reaches the pus in its secret recesses, and by the boiling, or bubbling process, carries it out, with its corpuscles, microbes and company. This carrying out is very important, for if the pus, as dead and decaying matter, were left in its original positions, nothing would be gained in the way of cure.

The peroxide came into a partial and limited use some years ago, and like some other agents that we would not like to be without now, it had to stand aside and await its time. Back in the fifties it was recommended as an oxidizing agent, just as the ethereal solution of terchloride of gold was used as a chloridizer. If memory is not at fault, both were used on inflamed dentine oftener than on soft tissues.

There is much in dental surgery that calls for the use of the peroxide of hydrogen, and the demand is more common and urgent in general than in any department of special surgery. Hoping a few hints from one who loves the profession with all the burning zeal of a hopeless love, may do some good, by increasing the zeal of the hopeful will explain the motive originating this paper.

What We See and Hear.

[We are always pleased to receive short, practical articles for this department, and invite any to send brief descriptions of such appliances, devices, methods, remedies, etc., as will be of interest to the profession.]

Bleaching.—When you bleach a tooth with peroxide of hydrogen, wash the cavity first with ammonia, then use the peroxide by introducing it on cotton or lint with wood, bone or ivory tweezers or points.—*Review.*

Gold Welding.—The clean surfaces of pure gold will weld without the aid of heat, and if the welding property is destroyed by accidental moisture or impurities, it can be restored partially without the aid of heat by washing the surface with chloroform. —Thomas Fletcher, *Items.*

The Ivory Broaches.—These broaches are made of very thin steel, finely tempered and twisted so as to form a corkscrew; they are fine enough to enter the smallest root canal; cotton can be wrapped on them and will not remain in the canal, but can be easily removed from the broach by a reverse turn of the instrument. They are worthy of a place in the operating room.

Pulp Capping.—Capping pulps must depend on the climatic and pathological conditions. You might cap one pulp successfully and fail on another under similar conditions. You might cap a pulp in Savannah successfully and a similar case might be a failure in Chicago; so it seems to me, sir, that there is no use in talking about capping pulps in a general way, because every case must be considered and treated on its own merits.—Dr. B. H. Catching, *So. Dent. Jour.*

Dental Hygiene.—I know a number of men in the dental profession, who are graduates of reputable dental colleges, who never take a dental journal, and who have been practicing for years and never attended a meeting of a dental association in their lives. So is it surprising, gentlemen, that the masses are so ignorant on the subject of dental hygiene, when we find so many of our own profession taking so little interest in the matter?—Dr. G. S. Staples, *So. Jour. report Sou. Society.*

Dental Dots.—A piece of fresh rubber tubing slipped over the duplex springs of the Shaw engine will strengthen them and prevent breaking, etc.

In the same way rubber tubing, drawn over the handles of your excavators, makes them much easier to handle.

Burnishers dipped in vaseline, won't stick to gutta-percha when hot, in filling cavities.

Oil of cassia has a greater range of antiseptic power than carbolic acid and is much safer.—Dr. D. V. Beacock, *Dom. Dent. Jour.*

Treatment of the Gums after removal of Calculus.—Dr. O. B. Love: I have found iodine a very fine application for the gums after the removal of Calculi, especially where the gums had been pressed down by the calculus. Cleanliness means healthfulness in the mouth as well as in the body. Proper care will contribute much to the preservation of the teeth. Dentists should teach their patients how to use and exercise such care.

Dr. A. J. Lawrence: I have used a mixture of iodine, carbolic acid and glycerine, for sore mouths with very beneficial results.—*Texas Dent. Jour.*

Treatment of Pitted Teeth of Children. — Sandarach varnish, both thin and inspissated, is efficient in the repair of the highly pitted teeth that we find in the mouths of children suffering from infantile dyspepsia. If it were faithfully applied as soon as the difficulty was found, the probability is that they would need nothing else. It should be used thin enough to penetrate all the checks and interspaces; then have the alcohol washed out of it with water so as to allow it to seal up all the pitted and roughened surfaces of the teeth.—Dr. W. H. Atkinson, *Sou. Society So. Dent. Jour.*

Treatment of Recurrent Decay.—In the last ten years I have made it an almost invariable rule in recurrent decay (and by recurrent decay I mean decay of a tooth where the filling had failed) to fill at the cervical wall in approximate fillings with tin foil. Especially where the cavity is in bicuspid or molar teeth has this proven good practice. I may say indeed that in all these years I have not seen such a filling fail, and when we consider how common failure is at this point—the "vulnerable point," as it is termed—I think it is an important fact. I prefer it to amalgam, partly for the reason that it can be better finished at once.—Dr. Hodgkin, *So. Dent. Jour.*

Porcelain Inlay.—The porcelain inlay made by a gentleman from New Hampshire was unique in the method of fitting the inlay to the cavity. A few porcelain rods of different shades are cemented into a mandrel and they are ground down to a point—about like this ● or larger, as may be desired. The cavity is cleaned and the walls are paralleled. The mandrel is placed in the engine, the point moistened and dipped in diamond dust or any cutting powder and it is revolved in the cavity until it fits nearly tight, which is ascertained by frequent examination. The point is then cut off nearly the right length and it is set with balsam or an oxyphosphate, and the projecting end is ground down and polished. It is very neat and effective, and looks well after finished.—*Review.*

Restoring Posterior Teeth.—For posterior teeth, needing entire restoration, permanent gold matrices or bands, filled with amalgam, are of great value. In this work, I cut or crowd the gum tissue back, dress the root as desired, make a close fitting band, varnish both sides to prevent the mercury discoloring, force it firmly upon the root, dry, and if any minute crevices exist for ingress of moisture, stop them with a small amount of gutta-percha, then adjust the dam as on any tooth and prepare the root canal and insert a post.

The amalgam may be capped to restore cusps, and should be nicely finished at another sitting. Or, amalgam or cement may be used for most of the filling and the cusps restored with gold foil. This would seem better than an ordinary gold crown, in that the work can be seen in every stage, and an imperishable joint is formed between root and band.—Dr. G. W. Dennis, *Review.*

Treatment of Irritated Gums.—When decay occurs below the gum line in approximating surfaces, we often find the gums puffy and highly inflamed. In this condition an over-sensitive surface presents itself, which also bleeds on the slightest touch, its epethelial covering being gone. The restoration of the gum to a healthy state should in this case be the first care of the dentist. By accomplishing this he will be enabled to adjust the dam on the tooth, and handle the cavity in filling it, with comfort to the patient and satisfaction to himself. To attempt to do so with the gum still sore would be extremely unpleasant to the patient.

For the relief of this condition, a saturated solution of salicylic acid in alcohol is very useful. Two or three applications, in as many days, will usually allay the trouble. If we wish to be certain of a speedy cure, glacial acetic acid will do all that we could wish. One application if properly made will be sufficient, although the patient should be seen once or twice thereafter. It will be well, in applying either of these substances, to use by way or preparation a two per cent. solution of cocaine, as otherwise the pain will be rather sharp.—Dr. R. M. Sanger, *Mirror.*

Dr. B. F. Arrington does not approve of the lining of cavities with any other material for amalgam, but favors the brushing of the cervical portion of approximal cavities with a good article of gutta-percha, and thinks such a method equally applicable for gold fillings. The operation is as follows: Prepare the cavity, and especially the cervical section; undercut for retention of material, gutta-percha; fill the cavity one-fourth, one-third, or one-half full from cervical line to crown with gutta-percha; do not condense and finish approximal face of gutta-percha until the amalgam is sufficiently hard for final finish.

Many fillings of amalgam and gold inserted by some of the best operators are found in a few years to be defective at the cervical line, especially when the approximal space had been restored by contouring. In such cases he obtains space by wedging, and fills with gutta percha. For cervical portions of approximal cavities he regards gutta-percha filling as more reliable than any other material.

Treatment of Teeth before Filling.—The strongest reliance in the treatment of carious teeth is to get out all the diseased and disintegrated parts and disinfect the cavity, and fill, if in the case of an adult patient, with some indestructable substance that is sufficiently hard to resist mastication, and that will wear equally or better than the tooth substance itself.

I recommend creosote and oil of cloves, equal parts, with which to wash out every cavity that you excavate, before filling. The purpose in using the mixture is to get the modified effect of the two in preference to the action following the administration of either alone.

The medical properties of creosote are: disinfectant, anæsthetic and depurative. And I would not be desirous of wiping it all out, not making the cavity too dry, before inserting the filling. I say it is depurative as a mocrobicide—a destroyer of the fermenting bodies that are present in all decaying cavities. Whatever little pellicles that would be converted into carbolate of albumen would simply be a dressing over the ends of the tubules to prevent thermal shock.—Dr. W. H. Atkinson, *Sou. Society So. Dent. Jour.*

Root Canal Dryer.—I have used for the past year, with unbounded success, a root dryer of my own conception. It is simple, cheap, and effective, being made of ordinary copper wire in 3 coils upon a metal point, cone socket or other, in a wooden handle and drawn out into a point. This instrument can be laid over the shield of the spirit lamp and the copper bulb heated as hot as desired. Previous to applying in the root canal it is my practice to apply some antiseptic oils to the canal and vaporize them with the dryer. A few applications of the dryer suffice to dry the root thoroughly and if gutta-percha is used for filling it will be found to work very easily and adhere to the hot sides of the canal, thus making a perfectly tight filling.

Directions for Making.—Anneal the copper wire thoroughly. Take an instrument of the desired size to hold the point, allow 2½ inches for the point and then coil around the instrument until desired size is reached, then coil back to the point again and then over again to the end. This end may be retained in place with a little silver solder. The copper point each time it is used is annealed and always remains flexible. New points can be made at a trifling expense or a new canal point soldered in when desired.—Dr. Wm. F. Gay, *Dent. Review.*

The Dentists who Fail.—All dentists know how comparatively few entering the profession ever make a success of it, and I believe it is all owing to the fact that the great big majority entering the profession are entirely unfitted by nature for the business. They enter the profession because they know that Dr. A. or B. is getting more work than they can possibly do, and of course making more money than a mule can pack, without a thought as to whether they are qualified by nature to make a dentist or not. Dr. A. or B. takes him in his office, without a thought as to whether he is qualified or not, for he wants him to do the "dirty work" in the office, or takes him for the fee he receives for instructing him. He spends several years and several hundred dollars trying to learn what he never knows. He feels he is out so much time and money, so he must get it back in the same line of business. The consequence is he humbugs himself into the belief that he is a dentist, and humbugs a few people into letting him "monkey" with their teeth.

Being a failure as a dentist, he fails to take any interest in the profession, fails to attend associations, fails to take the journals, fails to save teeth, and finally dies and goes to glory (or somewhere else) a failure from beginning to end.—Dr. G. S. Staples, *So. Jour. report Sou. Society.*

A Convenient Matrix.—The use of matrices in making approximal fillings, especially where plastics are used, is to be highly recommended for this purpose, wherever they can be employed without interfering with the proper contour. By their use the operator can thoroughly pack the filling material against the floor of the cavity without causing overlapping. In this connection I employ the Parmly Brown strips, although copper or brass rolled out thin will answer every purpose. Taking a piece of sufficient length, it is passed around the tooth with the ends to the outside. Having drawn this tightly it is then seized with a pair of flat-nosed pliers and squeezed together at right angles to the tooth. In this way the band is made to fit very closely. It is then removed, and the flat approximating surfaces wet with chloride of zinc. A piece of tin foil is placed between them, and the whole held firmly in a pair of soldering pliers, is passed over a bunsen or alcohol flame, to solder the ends securely together. In this way a closely fitting matrix can be made quickly with very little expense or trouble, which can be left in place until the following day if so desired. This is a great advantage in compound cavities, as the patient is effectually prevented from dislodging or crushing the filling before it has thoroughly hardened. —Dr. R. M. Sanger, *Mirror*.

Matrix.—No material but steel fills all the requirements of a matrix, and I am at a loss to know why steel of a proper quality has not been furnished I have found the steel used by clockmakers for the support of pendulums, when of proper gauge, to possess the desired qualities.

This steel is manufactured and sold wholesale by Jules Japy, Beaucourt, Doubs, France; but no doubt the same quality can be had at any jewelers' supply-store in America. I can only recommend exactly the gauge mentioned, six-one-hundredths millimetre, equal to twenty-three-ten-thousandths inch. These matrices can be soldered by the use of a soldering iron, which avoids the possibility of taking the temper out of the steel. The steel is bought in sheets, perhaps an inch wide, and as long as is desired. It is not thicker than very thin paper, and can be cut and shaped with a pair of pocket scissors. A mandrel similar to that on which jewelers measure rings, but smaller, measuring fifteen millimetres in circumference at the point and forty millimetres at its larger end, divided by twenty-five lines, one-half a centimetre apart, and stamped on each line with the number corresponding to its circumference at that point, is a necessity where one desires to keep a set of matrices systematically and at hand for immediate use.—Dr. L. C. Bryan in *Int.*

Manner of Treating Badly Worn Teeth.—Grind the tooth level upon its articulating surface, bevel the edge of the enamel, then drill two holes, one on each side, in the vicinity of the pulp to the depth of one-tenth of an inch. Then fit accurately a ferrule of pure gold to the beveled edge of the enamel. By beveling the inside edge of the ferrule make sure that it is a trifle longer than the tooth, and but a trifle, as we use the ferrule to form the surface of the cap, and if it is too large it will have to be ground away in finishing. The ferrule is made to restore the normal height of the tooth. Then take No. 4 cohesive foil and fold it to thirty-two thicknesses, and anneal it in the alcohol lamp; lay it over the end of the tooth, and press it up firmly with the finger while thrusting the pins which have been prepared through the foil into the holes made for them in the teeth. Then take a piece of beeswax about large enough to fill the ferrule, warm it slightly, and press it firmly into the ferrule. Then remove it from the tooth. The wax will hold all the pieces in proper position until invested. After the investment has hardened, wash the wax out with hot water and fill the ferrule with eighteen- or twenty-carat gold solder. When it is removed from the investment, it should be tried upon the tooth and roughly finished with corundum-stone and burnisher. It is then ready to cement into place and receive the final finish. This method is not as tiresome to patient and operator as capping with foil, and makes a very durable capping.—DR. A. F. TOWNSEND, Worcester, Mass., *Cosmos.*

DEVITALIZING PASTE.—DR. S. H. MCNAUGHTON: A few days ago I received a note from your president asking about a preparation I use for devitalizing pulps, and adding that he should like to have me present the formula of it to this society. The formula is—

Thymol, 24 grains;
Camphor, 12 grains:
Arsenious acid, 3 grains.

It acts much as other "nerve pastes" do, except that it heardens and toughens the pulp and makes its removal easier. And there is no decomposition or disintegration of the pulp, even if it should remain in the tooth for three or four weeks.

The devitalizing of the pulp is usually accomplished in from two to four days. If one or two applications do not destroy the pulp, then I add a little salicylic acid, which tends to soften and dissolve it; but, by using the salicylic acid, one of the very best qualities of this preparation—that of preserving the pulp from disintegration—is lost. If, after the application of the arsenic, there is severe toothache, I apply to the pulp (without washing or syringing out, and being careful to avoid pressure) another preparation, the formula of which is—

Camphor, 60 grains;
Tannic acid, 30 grains;
Alcohol, 1 ounce.

This will nearly always prove effectual, but may require a half-hour, and the action of the arsenious acid appears to be continued under it. The camphor coagulates and makes a firm plug.—*Inter.*

Arsenious Acid and its Application.—We haven't, all of us, good memories, and it is once in a while the case, at least with the writer, that where two or three dozen dead and dying pulps are on hand, one gets a trifle mixed. People will put these things off, and so many teeth come in, as I say, dead or dying, that I at least sometimes forget just what I did last time. In one case I make a devitalizing application, in another some antiseptic, a third has a root dressing, etc., to the end of the list. Again, it happens that the dressed tooth does not come back for weeks, and before removing the temporary stopping one sometimes stops and wonders, "What did I do last time?"

Now, in the case of arsenious acid, and I am free to say that I use it often and don't see how I could do without it, in the case of arsenious acid, it struck me sometime ago that I would like to know in some easy way that I *had* applied it to a pulp, in the case of the man who had stayed away a month "because it hadn't hurt him any since the first day," and so I made a mixture of arsenic, iodoform, vaseline and carmine color. I read in the journals that the iodoform prevents the arsenic from hurting, but it don't do it—at least not always, but it doubtless modifies the pain; but the carmine colors the mixture, and I can see just where it is. A very small pellet of cotton is dipped in the bright red paste and sealed up in the cavity, and if it isn't opened for a month or two it shows the color and recalls the fact as to what was done.—Dr. J. B. Hodgkin, *So. Dent. Jour.*

Nerve Canals, Treating and Filling.—Dr. J. A. Thornton said he had found the most expeditious way to dispatch nerves, after having applied arsenious acid, was to cook 'em. He liked them fried. His receipt was to take an Evans root-drier, heat it nearly red-hot, push it into the canal and the nerve and pulp would stick to the instrument and could be more readily and effectually withdrawn than with a nerve broach. Found the root-drier an almost indispensable adjunct in filling root-canals successfully.

Dr. H. H. Johnson agreed with Dr. Thornton as to thorough dryness being a necessary step to obtain success in root-filling. As it had been demonstrated that neither micro-organisms nor their spores could exist in a dry locality, it became at once obvious that if a canal could at once be thoroughly dried and kept so, success must necessarily follow, whether any medicaments had been used or not. As a precaution, however, it was better to use an antiseptic, generally a non-coagulant of albumen in conjunction with thorough cleanliness and dryness, after which if the apex of the canal be sealed up with some material impervious to moisture, success must be assured.

Dr. Johnson does not attempt to remove the nerve, if the patient's time will admit, until a line of demarkation has been formed between the living and dead tissue. It may then be removed entire without any trouble. He always enlarges canals if possible, at least a short distance, believing that a great deal of organic matter is thus removed by cutting away the enlarged ends of the tubuli; also that better access is thus obtained, as a great many canals are flat and contracted at the opening at the pulp chamber and become larger further down, thus facilitating the removal of debris with fine barbs and broaches. Pulp canal drills on the right angle attachment come in handy here, and if carefully used, turning the engine slow, with a light touch, need not be broken.—*So. Dent. Jour.*

Books and Pamphlets.

A TREATISE ON IRREGULARITIES OF THE TEETH AND THEIR CORRECTION, including, with the author's practice, other current methods. Designed for Practitioners and Students. By J. N. Farrar, M.D., D.D.S. Complete in three volumes. New York: Published by the author. Vol. I. Price per volume, cloth, $6.00; sheep, $8.00. H. Helfield, general agent, 1271 Broadway, New York.

The author of this treatise is widely known in the dental profession as one thoroughly competent to complete the task of so vast an undertaking as this, and the volume before us proves that competency. A work on Irregularities in three royal octavo volumes containing about 800 pages each and over 2,000 illustrations, not including those in the third volume, is the greatest thing on earth in the way of a treatise on this subject.

The author says: "In this treatise I have aimed to make my views especially clear, not only to correct current erroneous impressions, but to also place the results of my experience before the profession to whose welfare and progress I have striven to contribute during the best years of my life. * * * To hint, much less assert, in this day of progress, that I have gone over the ground of this subject so thoroughly that improvement is impossible, would be absurd. These volumes are simply the exposition of conclusions derived from a personal experience of twenty four years, jotted down in odd moments and written out at intervals extending over a period of fifteen years, at hours which are generally devoted to sleep. The work has, however, been revised to the latest date before going to press. * * * While these pages are principally devoted to setting forth my methods of practice, I do not all assert that the methods of others are without value; for many are very meritorious. * * * If there is one point which I especially desire to have well understood, it is that my object has not been, nor is it now, to destroy old methods but to improve them, or at least to contribute to that end. * * * A clear knowledge of principles is necessary to thoroughness, and as thoroughness is essential to enable the operator to grapple more easily with difficult cases, I have endeavored to mark out a course with this end in view, giving especial attention to philosophical principles that will include and extend beyond the range of the average operations, supported by what I believe to be a sufficient number of typical cases to illustrate the more important phases, etc."

The difficulty experienced by most dentists, in taking up cases of irregularity, is the devising and making of an apparatus to bring about the necessary movements of the teeth. To aid this matter the author has devoted a large part of the work to the explanation of different plans for constructing apparatus suitable for every class of irregularities. The illustrations having been drawn from devises actually made and in use, not from imaginary ones. In the arrangement of chapters the author has made them progressive beginning with an interesting history of early dentistry (extending as as far back as 400 B. C.), following this is etiology and then the successive changes of later development to the simpler cases of irregularity, thence to the more difficult, with explanations as to the best plan for the correction of each.

Another phase of the arrangement is a classification and explanation of the principles of the various devices in use, after which is given an approximate classification of cases, with the operations and the different kinds of apparatus that have been found practicable for performing them, so that the reader desiring information on any special subject, whether as to mechanism or as to cases, can easily find it.

This volume treats of the History and Etiology of the subject; The Basil Principles of Regulating; Nomenclature; Principles of Construction of Apparatus; Retaining Devices; Laboratory Rules for Manufacturing Devices; Application of Force; Eruption; Antagonism; Interdental Spaces; Correction of Irregdlarities by Grinding; Extraction, etc.

The second volume (soon to be issued) will contain the Classification of Irregularities and the various methods of Treatment for correction; Straightening Teeth to Line; Turning and Elevating Teeth; Widening and Enlarging the Dental Arch; Correction of Protruding Teeth; Miscellaneous Suggestions and the Esthetics of Dentistry.

Volume three will be wholly pictoral being an object index of all mechanisms described in the other volumes.

Dentists owe Dr. Farrar a great debt of gratitude for the labor, expense, and sacrifice of all the spare time of the best years of his life for the good of the profession, and we hope that every dentist will avail himself of the opportunity of securing this work. The book is a model of neatness, well printed on heavy calendered paper, and appropriately bound. We heartily congratulate the author upon the appearance of the first volume.

DESCRIPTIVE ANATOMY OF THE HUMAN TEETH, by G. V. BLACK, M.D., D.D.S. Philadelphia: Wilmington Dental Mfg. Co., Publishers. Price, cloth, $2.50.

The literature pertaining to the anatomy of the teeth as presented in portions of different works has been very meagre and this is the first work that pertains solely to this subject. The book does not include comparative anatomy nor histology of the teeth, but the author has endeavored to systematize the nomenclature of the several parts of the teeth in detail; and give such a description as will call attention to every part of each tooth as general anatomists call attention to every part of each bone. The writer in his preface says: Our aim has been to confine the book strictly to normal microscopic anatomy. However, a very serious difficulty, which has always met the dental anatomist, has been the variations of form met in teeth of the same denomination. The endeavor has been to systematize these under one, two or more typical forms of each tooth, or its lobes, and point to the character of the changes which occur. This has occasionally led to the mention of abnormal forms. The reader will find scattered through the work some hints with regard to the practical bearing of anatomical points on operative procedures, which it is hoped will be of value."

The illustrations have all been made by the author from accurate measurements of the tooth in hand, and those showing pulp chambers and root canals, from prints taken directly from the teeth cut and ground so as to expose the opening throughout their length. This accuracy makes the engravings of special value. The table of measurements of the teeth of man, as given is interesting. The greatest, least and average measurements of the length over all, length of the crown, root, diameters of the differeut surfaces and curvature of the gingival line, is presented in millimeters and tenths of millimeters. The book is neatly printed and bound and will make a valuable addition to the dentist's library.

A COMPEND OF HUMAN ANATOMY INCLUDING THE ANATOMY OF THE VISCERA. By Sam'l O. L. Potter, M.A., M.D., Professor of Theory and Practice of Medicine in the Cooper Medical College of San Francisco; author of A Hand-Book of Materia Medica, Pharmacy and Therapeutics; a Compend of Materia Medica, etc., etc. Fifth edition. Philadelphia: P. Blakiston, Son & Co., Publishers. 1890. Price, cloth, $1.00; interleaved for taking notes, $1.25.

This is one of the popular "Quiz Compends" printed by these well known publishers. The present edition has been carefully revised and enlarged. It is illustrated with 117 wood engravings and 16 lithographic plates, and contains 315 pages. In his preface the author says of this work: "Originally designed for the student, in preparing for the exercises of the quiz-room and for his final examination, the text is confined to the essentials of each structure treated of, which are arranged in such a manner as to facilitate their rapid requirement. All superfluities of description have been studiously avoided, and only such matter inserted as should be thoroughly known in order to pass a rigid examination on any one organ or structure of the human body. The descriptions closely follow Gray, though Quain and other recognizen authorities have been freely consulted during preparation of the text."

An appendix of 43 pages has been added to this edition and contains an original and complete set of tables and plates of the arteries, cranial and spinal nerves and plexuses, and the sympathetic nervous system. These have been prepared especially for this work and are of great value, not only to the student, but the practitioner who desires a comprehensive view of these complicated parts of the human organism.

TRANSACTIONS OF THE AMERICAN DENTAL ASSOCIATION at the Thirtieth Annual Session held at Excelsior Springs, Mo., Aug., 1890. Chicago: H. D. Justi, Publisher. Price $1.00.

These Transactions are always interesting and instructive, and the issue of 1890 is of special value. The work can be had for the price named and should find a place in all dentist's libraries.

THE PHYSICIAN'S VISITING LIST FOR 1891. Philadelphia: P. Blakiston, Son & Co., Publishers. Price, $1.00; interleaved, $1.25.

This handy list is arranged for 25 patients per week. Besides the space allowed for register, memorandum, special notes, cash account, etc., the book contains considerable valuable information in the way of dose tables, poisons and antidotes, methods in asphyxia, aids to diagnosis in eye diseases, new remedies, incompatibility, etc., etc.

BOOKS RECEIVED.

Medical Bulletin Visiting List, 1891. Philadelphia: F. A. Davis, Publisher. Price $1.25.

The Physician's All-Requisite Account Book. Philadelphia: F. A. Davis, Publisher. Price $5.00.

Our Aftermath.

Dr. C. H. Land, of Detroit, Mich., has opened a "Post-Graduate School of Dental Art."

Women students were admitted to the National Dental Hospital, London, in 1887 for the first time.

Another Post-Graduate School of Prosthetic Dentistry is talked of. This time at Springfield, Ohio.

A Much-Needed Invention is an improved headrest cushion. Dr. A. F. Emminger, of Columbus, Ohio, has a good idea for one if he would follow it up.

Copper or Gold Canal Points will easily enter the anterior canals of inferior molars or the buccal roots of superior molars, if the points are slightly flattened on an anvil. W. H. S.

A Curious Practice.—According to Dr. Mackay, the aboriginal tribes of North Formosa knock out the eye-teeth of their children at an early age, under the belief that it strengthens their wind and speed in hunting.

To Drill Copper Amalgam Fillings.—First soften them with the Southworth flash-lamp. It is almost painless, and, if the tissues around the tooth are sore, will save the patient much misery and the dentist several drills.

W. H. S.

L. D. S.—Is it Right?—There are in the State of Ohio quite a number of dentists, who, having passed the State Board of Dental Examiners, are using the title L.D.S. We do not believe the law gives them any claim to the title, or that the Board would grant a certificate to any one intending to make such use of the license to practice.

Dr. C. Bradley, of Dayton, Ohio, died there Nov. 3, 1890. Dr. Bradley studied dentistry in Franklin, Ohio, was a graduate of the Ohio College of Dental Surgery and one time practiced in partnership with the late Dr W. A. Pease, of Dayton. He was the last President of the Mad River Valley Dental Society and member of several others. We hope to have a more extended notice later.

No Munchausen about it.—It is even stated on good authority—although it must be owned that the statement has a strong "Munchausen" flavor about it—that a French spy in 1870 traversed the German lines with a photographic despatch concealed in the hollow of one of his false teeth!—*Leisure Hour.* Geo. Kennan, in one of his lectures on Siberia, states that Russian political exiles often carry tissue paper dispatches sealed in the cavity of a decayed tooth.—[Ed.

ALUMINUM OR ALUMINIUM?—*To the Editor of the N. Y. Tribune:* In the *Tribune* of November 13th there is an extract from *The Engineering News* commending the use of the word "aluminum" rather than "aluminium." Is not the latter the better form, being in conformity to the latest chemical nomenclature and uniform with the names of other elements, as sodium, potassium, barium, strontium, aurium, etc.? F. S. D.

Mount Vernon, N. Y., Nov. 19, 1890.

PLATINUM IN RUSSIA.—The platinum mines of Russia, discovered in 1824, are near Bogoslowsk, Miask, Newjansk, and Nischnei Tagilsk, in the Ural Mountains. At six places in 1868, 1869, and 1870, from 494,000, 367,000, and 263,000 tons of sand, 6,675, 7,770, 6,455 pounds of raw platinum were obtained respectively. The metal always contains some other substances; thus Le Play found, in a sample from Nischnei Tagilsk, 75.1 platinum, 1.1 palladium, 3.5 rhodium, 2.6 iridium, 0.6 osmiridium, 2.3 osmium, 0.4 gold, 1 copper, and 8.1 iron.

BUDDHA'S TEETH.—Although the original tooth, a superior left cuspid, was captured by the Portugese, A. D. 1560, and before an imposing assemblage was crushed in a mortar at Goa by the archbishop of that city, there now exist two genuine (?) left cuspids in their shrines in India—the king of Kandy claiming his to be the only original one, and the king of Pegu making similar claim for the one in his possession. However, the latter has few worshipers and as the English government holds one of the three keys to the shrine of the former, it is the one to which pilgrimages are made. The following description is from an account of a visit to the Kandy shrine by the Prince of Wales: "The karundoua, or vessel containing the tooth, stands covered on a table of massive silver, richly chased, in the midst of a profusion of valuable articles of jewelry, which are either relics or offerings. The most beautiful in the collection is a bird with wings spread. It is formed entirely of diamonds, rubies, blue sapphires, etc., set in gold, which is hid by a profusion of gems. While we were all admiring this magnificent offering, the priests or monks removed several folds of muslin from the karundua, and discovered a sort of dome of gilded silver, about five feet high, studded with a few gems. When this was removed, another was found underneath, made of beautifully carved gold. This was festooned with jeweled chains, and literally encrusted with all the glittering gems for which Ceylon is so celebrated—sapphires and emeralds of extraordinary size, cats'-eyes (much prized), rubies, amethysts, and pearls. Another similar covering, and still another, were taken off, when at last was reached a small case of gold, covered externally with rubies, emeralds, and diamonds, in which, resting on the leaves of a gold lotus, was the tooth itself."—*William T. Trant.*

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Contributions.

"A word fitly spoken is like apples of gold."—Solomon.

NOTES ON METHODS OF INTRODUCING GOLD FILLINGS.

BY JAMES F. COLYER, L.R.C.P., M.R.C.S., L.D.S., LONDON, ENGLAND.

Continued from page 23.

Having considered briefly the various instruments used, we will pass to the consideration of the actual filling of the cavity.

In this country two forms of gold are generally employed, viz., Tape and Pellets.

The Tape is usually obtained by folding up sheet gold to the required thickness, though some firms now sell the gold ready folded up, when it only requires cutting to be ready for use.

Gold foils are numbered according to the weight of the sheet; thus a sheet of gold measures 4 ins. square, and if it weighs 4 gr. it is termed No. 4 thickness, if 8 gr. No. 8 thickness, etc., so that when we speak of 48 tape, we simply mean tape of such thickness, that if we had a sheet of gold of the same dimensions it would weigh 48 grains.

Now the tape usually employed is from 32 onwards, and this may be obtained by folding a much thinner foil to that thickness.

Thus, supposing you wish to use No. 32, you would take a sheet of No. 4 foil and fold it once so as to make it No. 8 thickness, then again to make it No. 16, and again to take it to No. 32. When using thicker foils it is useful to fold two or three sheets at once. Instead of thin foils thus folded, some use heavy or rolled gold of thickness averaging from 20 to 60; this form is extremely cohesive, and useful for contouring, but it is not so easily worked, and does not adapt itself to the cavity so well as tape prepared by folding.

For folding gold a pad and foil knife will be required; these can be obtained at any of the depots, care being taken that the edge of the foil knife is perfectly straight.

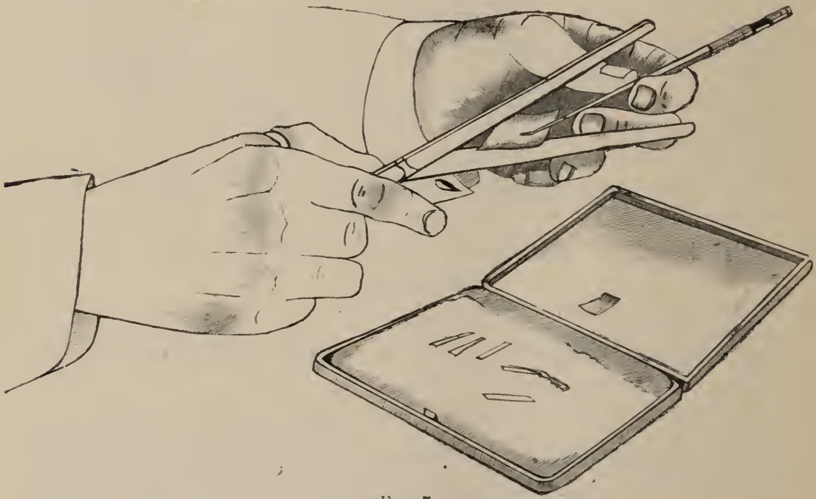


Fig. 7.

Having folded the gold, the next step is to cut it into strips, and an easy method of cutting it quickly and regularly is as follows:—

Take the folded gold in a pair of tweezers, held between the thumb, first and second finger of the left hand, then take the foil scissors in the right hand, resting the lower blade on the 3rd and 4th fingers of the left hand, by this means the scissors are steadied and the gold may be set to any width desired.

The thickness of gold used varies; for retaining pits and difficult cavities No. 32, for more accessible places Nos. 48, 64, 96, but in using the heavier foils considerable practice is required. The width of your strips also varies, for retaining points a strip practically as fine as can be cut ▬; for difficult cavities, ▬ and for more accessible places according to the breadth of the cavity.

The other form of cohesive gold, viz., pellets, requires but short notice. There are numerous makes in various shapes and sizes, the cylinders are the most useful form, and of these Wolrab's are as nice as any, they are semi-cohesive, working softly and easily.

As to choice between the use of foil and pellets, considerable difference of opinion prevails. To my mind, foil is without doubt the better, especially for building over edges and contouring. Those, however, who use pellets, claim that they are easier and quicker to work. In some cases they may be a little easier to work at first, but as to quickness there is a doubt, when one is able to manipulate foil of 64 thickness onwards, with the electric mallet the advantage of tape over cylinders in saving time is considerable.

In using cohesive gold care should be taken to avoid touching it with the hands, since moisture, grease, and exposure to air, destroy its cohesiveness. Though foils are sold as cohesive, it is always best to pass them through the flame before working, and for this purpose use a spirit lamp. A Bunsen burner leads sooner or later to failure, the cause no doubt being due to the impurities contained in the gas. In annealing take care not to overheat the gold, since many kinds become harsh in so doing. Good cohesive gold can be annealed to a dull red heat without becoming harsh.

Having passed in review a few general points as to the material used, we must next consider the filling of each class of cavity separately, but before doing this, it may be well to mention the two general methods in use for starting cohesive plugs, viz., the one by using starting points, and the other by wedging a large cohesive cylinder into the base of the cavity.

The former method is generally employed for starting fillings, in front teeth, and approximals in bicuspids, etc., when filled with cohesive gold throughout; the latter method principally in crown cavities, where in drilling starting points you run a risk of injuring the pulp.

For facility of description, we will consider the filling of cavities under three main heads, viz., (1) filling crown cavities; (2) approximal cavities in molars and bicuspids; (3) approximal contour cavities in front teeth.

Crown cavities.—These cavities occurring typically in molars, are best started with cylinders. The method being this: take two or three large cylinders according to the size of the cavity, and place them ends upwards in the cavity, then with a suitable plugger tack the cylinders round the margins of the cavity, leaving the centre last. By this proceeding the cylinders are only slightly condensed, but the gold is got into a suitable position. Now take a plugger in the left hand (the pattern is of no importance) so as to steady the cylinders, whilst with the use of firm pressure, first round the edges in direction towards the walls, then in the centre gold is closely condensed.

It is extremely useful to condense with these cylinders a strip of cohesive tape, the latter enabling the operator to start his cohesive tape more easily.

The cylinders being steady, anneal a piece of tape by gently passing it through the flame (keeping the part between the tweezers in the flame a little longer than the other); place it in the cavity and condense with suitable pluggers, using either hand-pressure or mallet force. In condensing, fold the gold over so that each fold lies parallel with the floor, and exert the force in a direction as far as possible towards the walls of the cavity. The piece being in position, fresh portions are added, and thoroughly condensed until the cavity is full.

In malleting, the force of the blow should be directed towards the walls of the cavity, the most inaccessible parts being filled first and the filling kept if anything a little higher towards the walls than the centre.

Now it is impossible to build the gold so accurately as to bring it exactly flush with the edges of the cavity, hence it becomes necessary in filling to mallet the gold over the edge, and when the plug is completed to cut down the surplus by means of burs and corundum points.

The operation of building over the edges is the most important, and at the same time the most difficut part of a filling to execute with accuracy and nicety. It is best accomplished as follows:

Tack down a strip of gold near the margin of the filling, and having carried the tape over the edge refix it again over the same spot. (Fig. 8). A loop of gold is thus left simply hanging over the edge, first tap this loop down gently, and then mallet, taking care not to use too much force. (Fig. 9.)

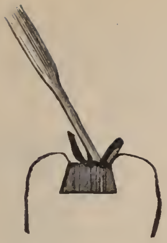


FIG. 8—showing loop hanging down.

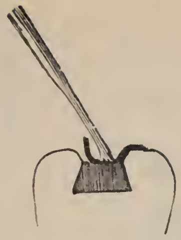


FIG. 9—showing loop malleted down.

Having built over all the edges and filled up the centre of the cavity to the right level, the next step will be to trim the filling by cutting down the surplus over the edges, smoothing the surface and polishing. For this purpose finishing burs and corundum points are used, the former for cutting away the surplus over the edges, the latter for smoothing the surface. In using these, care should be taken to cut in a direction from the filling to the tooth, rather than from the tooth to the filling, for this reason, in the former direction one is likely to burnish the gold over the edges; in the latter to tear the gold away from the edge.

Having trimmed the edges, turn your attention to the bite and see that the filling is not high (a most important point). Having ascertained that the bite is not obstructed, smooth the surface first with a corundum, and then with an Arkansas or Hindostan stone, the object of the latter being to remove scratches and so produce a higher finish; finally finish with some pumice on either a wooden or rubber point. The various steps in filling a molar are diagramatrically illustrated in Figs. 10 to 13.

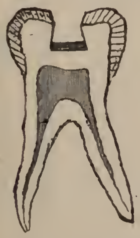


FIG. 10—showing how to start big wedging cylinder at base.

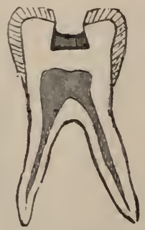


FIG. 11—showing how to build, keeping gold a little higher against the walls than in the centre.

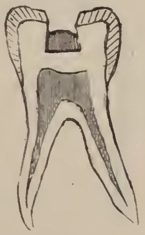


FIG. 12—showing how not to build not to keep higher in centre than at sides.

It should be borne in mind that in trimming the edges we endeavor to get a joint between the enamel and gold so perfect that the finest probe passed from the filling to the tooth or *vice versa* does not catch. The edges being considered trimmed when the probe passes over all the parts without catching.

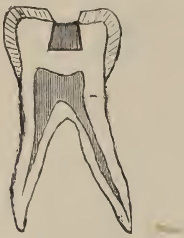


FIG. 13—showing time to build over edges.

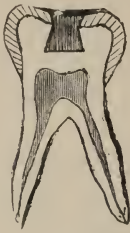


FIG. 14--showing the cavity filled ready for trimming.

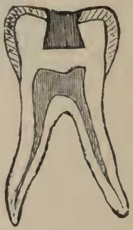


FIG. 15—shows the filling completed.

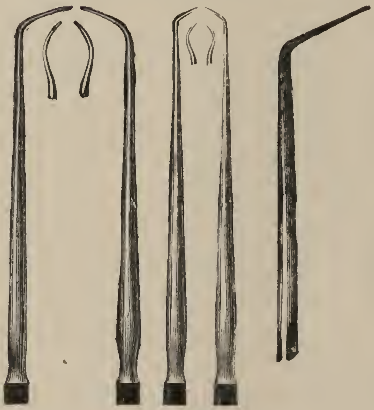


FIG. 16.

Useful shapes and sizes of instruments for finishing are shown in the following:

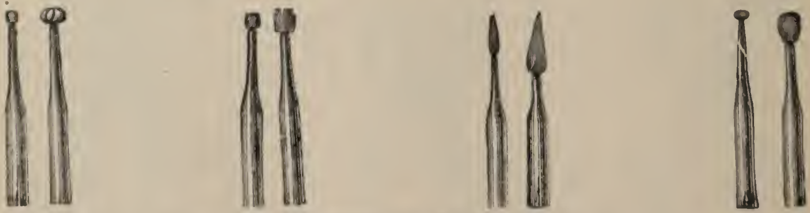
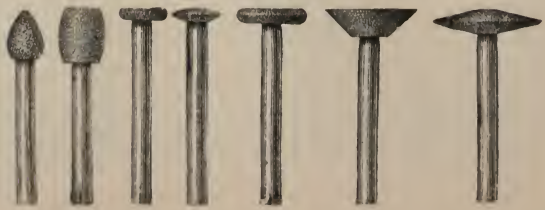


FIG. 17—representing Finishing Burs.



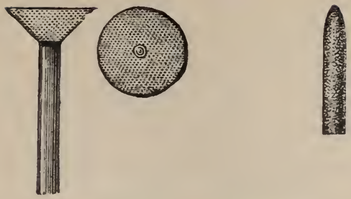


FIG. 18—Corundum Points.

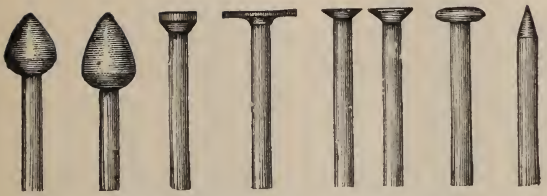


FIG. 19—Wood Points. (Dr. Southwood.)

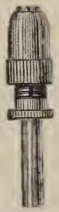


FIG. 20—Port Polisher for carrying Wood Points.

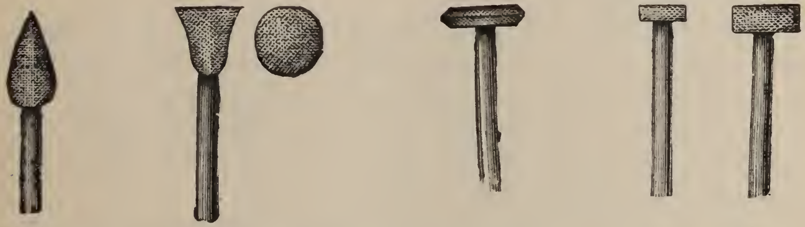


FIG. 21—Useful Hindostan Stones.

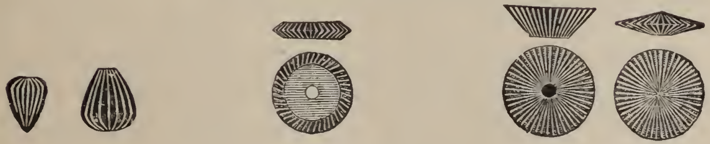


FIG. 22—Rubber Points.

Approximal cavities in bicuspids and molars.—These cavities are best started by retaining pits, one at either angle of the cervical edge.

For filling these pits, tape will be required of about No. 32 thickness, the breadth being the same as that of the pit to be filled. The best shaped instrument for filling are those illustrated in Fig. 1, of Webb's set, shown in Fig. 23, and Rogers' retaining point plugger, the point of importance being that the plugger should be a little smaller than the diameter of pit, so as to overcome the tendency of the former, to cut the gold when filling. In annealing this piece of gold, the end contained in the tweezers sometimes does not get thoroughly annealed. This may be avoided by first annealing the strip of gold, holding it by one end, and then having taken it up by the opposite end, again passing it through the flame. Having annealed the strip, by means of the tweezers, gently lay it over the orifice of the pit, then with the retaining point plugger, invaginate the gold into the pit, and removing the instrument, give it the slightest amount of rotation (this will avoid bringing out the gold with the instrument). The gold is now tucked in, in successive folds, until the cavity is full, firm pressure being used as this point is necessarily one of the most vital in the filling. Having filled the retaining pits, bridge the gold across from one to the other, condensing the foil in layers parallel to the floor.

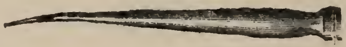


FIG. 23.

The next step is to build from this bridge of gold, in a direction towards the cervical edge, using exactly the same methods as described under crown cavities, and having looped the foil over the edge, it is an excellent plan to chop off with the mallet (electric or hand) any superfluous material, thus, to all intents and purposes, burnishing the gold against the edge.

Too much care cannot be bestowed on this part of the cervical edge, as it is far and away the most important of the filling.

This operation being satisfactorily completed, continue adding fresh pieces of foil, until the cavity is full, keeping the gold flat, and if anything, a little higher against the walls than on the centre, and a little higher on the contour surface than the median line of tooth.

The edges are built over as the cavity fills the crown surface and edges being completed last.

In filling these cavities build out contour, restoring as far as possible the original shape to the tooth.

The finishing of these fillings is accomplished as follows:

The cervical edge and upper part of the plug are first roughly trimmed down with plug trimmers; some useful shapes are shown in Fig. 24. They are used so as to cut in a direction from the gold to the tooth substance for reasons previously stated.

Strips of emery tape should now be used in a lateral direction on the approximal and cervical portions of the filling.

To make sure that the cervical edge is thoroughly finished it will be necessary as described under crown cavities, to test with probes, and wherever a catch is discovered the tape or plug trimmers must be again brought into use.

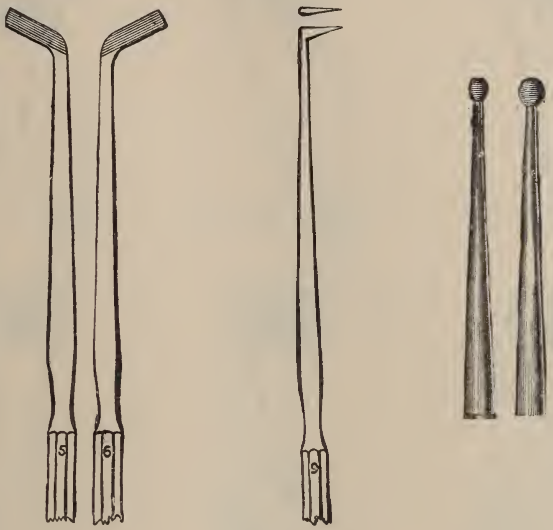


FIG. 24.

The lower part of the approximal surface may be trimmed down with a disc of emery, and this part of the filling is also best finished with emery tape as one can more easily get a nice contour with this than discs. If discs are used to finish the cervical margin it will be found extremely difficult to prevent destroying the contour of the filling.

The crown surface is trimmed and polished in exactly the same way as described under crown cavities. The contour surface is polished with either a little pumice on ordinary sewing tape, or with rubber caps and discs on the engine.

Figs. 25 to 30 represent the various stages and steps described.

Approximal contours in front teeth.—In these cavities great care must be exercised in getting the gold in absolute contact with the front wall of enamel in order to avoid that bluish appearance sometimes seen in front teeth filled with gold.

In filling, the method of procedure should be as follows:

First fill the retaining points at the cervical margin, bridge between them and build over cervical edge as recommended above.

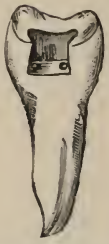


Fig. 25—shows retaining points filled.

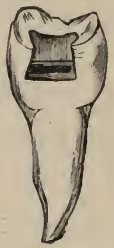


Fig. 26—shows gold bridged between retaining points.

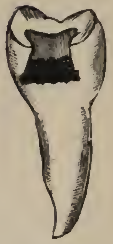


Fig. 27—shows gold built over curvical edge.

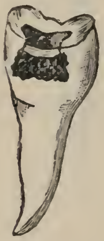


Fig. 28—shows how to build, keeping a little higher against sides than in centre.

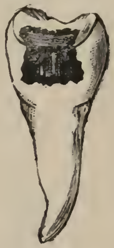


Fig. 29—shows cavity full.

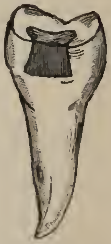


Fig. 30—shows the cavity completed.

Next build the filling down a little way, contour to required shape, and taking especial care to fill well posterior wall (Fig. 33). Now finish filling in the actual cavity (or hold for the filling) taking especial care to fill into any grooves if they exist, and also with the opposing point. (Stage is represented in Fig. 34). Next build over the posterior wall and edge, taking the filling out to the required contour (Fig. 35) and this accomplished, fill the tooth in, first building over anterior edge, and out to the required contour.

One recommends building over the posterior edge principally because the tendency is, if very careful attention is not bestowed, for the operator to build the filling out contour in front, leaving the posterior wall, which is excessively difficult to get at when the filling is completed in front.

These fillings are best finished with plug trimmers and tape at the cervical edge, dics and tape for the approximal surface, small corundum wheels for trimming the anterior surface, oval finishing burs, and small corundum wheels the posterior surface.

For polishing, pumice on rubber points, or ordinary sewing tape, should be used.

In the foregoing description, no attempt has been made to explain, in accurate detail, the filling of cavities, but rather to glance over the order of proceeding.

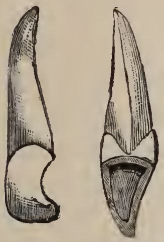


FIG. 31—shows side and front view of cavity.

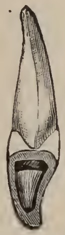


FIG. 32—shows retaining points filled and bridged between.

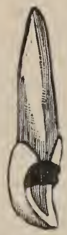


FIG. 33—shows tooth built down slightly a little way.

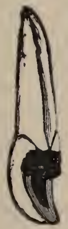


FIG. 34—shows actual cavity filled in.

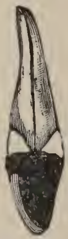


FIG. 35—shows post wall built over.

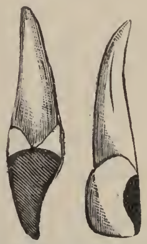


FIG. 36—shows filling completed.

There are of course many other shapes of cavities, requiring filling, beside those described, but the method is practically the same, viz.:

(1) To fill retaining points when present.

(2) To bridge across between them, and then build over the cervical edge.

(3) To build the filling up as level as possible, keeping it, if anything, a little higher against the walls of the cavity, than in the centre.

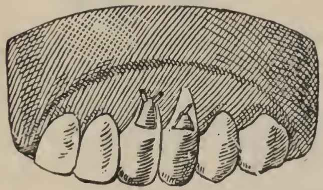
(4) To build over the edges as the filling advances.

(To be continued.)

A MEANS OF HOLDING THE RUBBER-DAM WHILE OPERATING UPON CAVITIES IN LABIAL AND BUCCAL SURFACES.*

BY C. R. BUTLER, D.D.S., CLEVELAND, O.

A GREAT number and variety of clamps and other devices have been tried and used by operators, but in many cases to the very great discomfort of the patient. And when there is a high degree of sensitiveness of dentine there is oftentimes very great pain, and sometimes almost beyond endurance. Even if the clamp remains steady after being placed in position, it is not always possible to carry the rubber-dam over it. Most operators are able to reach ordinary cases, but the question is how to reach the desperate ones that are occasionally presented. It is to this last variety of cases that I propose to call attention for a short time, and if a method can be suggested to overcome this difficulty, then a long step has been made in securing labial surface cavities against moisture while being filled.



The illustration here presented is from a case in practice which came under my hands about a month ago. Several fillings of cavities of this kind had been made by other operators, and more was needed. The patient expressed much dread of the clamp, but when told that the clamp would not be used said, "Well, I can stand anything else." In this case I put in two small screws, as shown in the cut. One is quite sufficient in most cases.

If the drill is nicely gauged to the screw wire the screw will become firmly attached even in a shallow cavity. Set the screw as near the border of the cavity as may be, and this should be done before the excavation of the cavity. The screw should be set sufficiently distant from the border to avoid the liability of checking the enamel. After the filling is introduced the protruding portion of the screw is cut off and finished upon the surface as a small filling would be. I prefer with the hand drill. Never use a screw tap. Let the thread upon the wire be sufficient for cutting its way into the dentine.

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* Read before the Ohio State Dental Society, held at Columbus, October, 1890.

The iridio-platinum or gold wire is hard enough to cut its way into the tooth bone, and the smallest size wire made is the best for the purpose. The small drills made by the S. S. White Dental Manufacturing Co., with limit shoulder are the safest for the operator if he is not able to make them himself. After having introduced the screws, place the dam on the tooth, slipping its edge over these screws before beginning to excavate. It is well to dip the end of the screw in phosphate cream with a trace of creosote added when ready to put it in place.

The illustration accompanying this will illustrate the principle and mode of procedure without further description.

DISCUSSION.

Dr. J. Taft uses DeLoss Palmer's set of clamps and he has been surprised in using to see how much there really was in them. They come in contact with the tooth so much more perfectly, and retain their place so much better, with less discomfort to the patient, than any of the ordinary forms.

Dr. Sage: I have sometimes used a strip of steel cut from an ordinary steel pen in filling cavities near the gum (labial cavities). Draw the temper and then cut from the pen a strip a line or two wide and three-fourths of an inch long, bend into the shape of a U; sharpen one side (or edge). Having applied the dam first, use this strip to force the dam up above the edge of the cavity, then tap it gently to make the sharpened edge "bite" slightly into the cementum of the root—merely enough to aid somewhat in holding it with the fingers. Press softened impression compound over the ends of several teeth, moulding it against and about the ends of the U to further assist in holding it. The cavity being then within the protecting half circle of the U may be burred out without danger of tearing the dam or lacerating the gum. No attempt is made to turn back the edge of the dam above the U (or "crib"), the crib itself serving to keep out seeping moisture, while the dam serves the general purpose of preventing an overflow.

Dr. H. A. Smith said, take for example a cuspid with a labial cavity extending under the gum margin. Adjust the rubber-dam, insert a suitable sharp instrument under the dam, press it up and tap a few times. The instrument goes into the cementum and can be held there. If the edge of the dam is turned in and copal varnish applied good results may be obtained. He thought we many times subject the patient to unnecessary torture when we could as well use a napkin as the rubber-dam. If the gum be thoroughly dried and varnish applied it will keep dry for sometime. He thought the great trouble was that too many operators wound the gum before the operation of filling is commenced.

Dr. M. H. Fletcher said where there was a leak about the gum he took a small piece of spunk, dipped it in plaster-of-Paris and applied. The plaster absorbed the moisture, soon set and checked the flow.

Dr. J. R. Callahan is opposed to filling teeth without the use of the rubber-dam. He uses How's cervical clamp which he thinks serves a very good purpose. For very sensitive cavities he applies nitrate of silver and leaves it for a week or so when he can usually excavate without pain.

PULP PROTECTION BY CAVITY LINING.*

BY G. F. CHENEY, D.D.S., ST. JOHNSBURY, VT.

In presenting the subject of pulp protection, I aim rather to bring out a discussion of a much neglected subject, than to offer anything particularly new (I am sure most of us see evidences of this neglect in our daily practice), neither do I intend to discuss pulp capping, but protection of unexposed pulps from thermal influence through metallic fillings by cavity lining.

It is a well known fact that thermal influence will account for the death of thousands of pulps under gold and amalgam fillings, and this is the beginning of a series of disturbances which, in time, result in abscesses.

I have seen so many abscessed teeth where, upon removal of the filling, sufficient apparently sound tissue was found to have fully protected the pulp, that I am inclined to believe that in this climate some protection should be used under most of our metallic fillings, especially in approximal cavities of lateral incisors and bicuspids where the pulps come so near the surface. Without doubt if a properly inserted lining had been used in these cavities the pulps could not have been anything but preserved. Of course it is possible that in a few instances the death of the pulp may have been caused by violence, like a blow or in biting hard substances.

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* Read before the Union Meeting, held at Boston, Oct., 1890.

In teeth where there is the slightest chance for the pulp to become injured by thermal or electric influences the safe course is best. Too much thought and care cannot be given to the protection of the pulp. We must always bear in mind the larger proportional size of the pulp in early life, the possibility of its occuping an abnormal position, the chances of there being a crack or fissure extending to it, and of a point of it coming nearly to the surface. (These chances were very beautifully illustrated to us last year at the Springfield meeting by Dr. Andrews.)

We must also be able to diagnose the difference between sensitive dentine and tenderness of the pulp. Sensitive dentine responds when excavating over a considerable portion of the cavity walls, does not respond to simple pressure; while, when in near proximity to the pulp it responds quite as readily to pressure as to the cutting instrument, and is confined so completely to a single point that the danger is at once suggested to the operator. In deep-seated cavities the necessity of caution becomes greater and the danger of intruding upon pulp territory increases, and, unless carefully protected, thermal changes may prove a disturbing influence which will give rise to more serious trouble.

For the protection of the pulp against these influences I should recommend something with as little conductibility as the case will admit. Scores of different materials have been in use, of these I will only mention a few, viz., varnish and the various zinc plastics, oxyphosphate, oxysulphate, and oxychloride of zinc. To me varnish is the most useful. I use the sandarac gum dissolved in alcohol and quite thin. The effect of varnish lining is to leave upon the cavity walls a thin semi-opaque whitish film which is non-conducting, non-irritating, insoluble and more in harmony with dentine than any metallic substance and can be used in any cavity no matter how shallow, because of the small amount of space it occupies. The operation of varnish-lining is very simple, having the rubber-dam adjusted and the cavity properly dried, a small pellet of cotton is dipped in the varnish, conveyed to the cavity touching the bottom and walls. Five or ten minutes should be allowed for hardening, which can be hastened by hot air. In some cases I take a piece of tissue paper, dip in the varnish and place over the cavity bottom.

In approximal cavities of the posterior teeth, especially those extending below the gum margin, we sometimes find ourselves in close proximity to the pulp with barely depth enough for anchorage to the filling, I find nothing else will take the place of varnish in these cases for a lining.

Oxyphosphate of zinc is an excellent liner, it is adhesive, does not shrink, and is indicated where the walls of the tooth need strengthening. In deep-seated cavities where undercuts exist, if the enamel is strong it need not be cut away, for when the cement is carefully packed in its place it forms a support, when hard, almost equivalent to dentine. A cavity cut in it to a depth a little greater than enamel, reduces the final filling with gold to an operation of the simplest character, as this cavity has a hard, firm base of cement and a boundary of cement and tooth substance, or of the latter alone. When using an oxyphosphate in deep-seated cavities we must not forget the necessity of protecting the pulp against the effect of phosphoric acid. This can be done by varnishing the bottom, or by using a little oxysulphate of zinc, or a pad of oxide of zinc and oil of cloves.

Oxysulphate of zinc* is probably one of the best pulp protectors which has ever been used, is easy of adaptation and perfectly non-irritating, alike to sensitive dentine and to the dental pulp, and is probably the best material to be used where the pulp is nearly exposed. Place a small amount of the thinly mixed oxysulphate over the bottom of the cavity, allowing a few minutes to set, then finish the lining by covering it with oxyphosphate of zinc.

Oxychloride of zinc, although used quite extensively, is not a reliable liner except when used in small quantity, it being a notable shrinker when used in bulk, which makes it very much inferior to the phosphates when we wish a strengthener for the cavity walls. It is irritating and should not be used near the pulp, except over varnish or oxysulphate. It has been said that oxychloride of zinc permits of no decay in adjoining tooth structure.

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* Flagg's "Plastics and Plastic Filling," page 161.

In 1888,* Dr. Kells, of New Orleans, La., by the use of an electric instrument demonstrated before the joint meeting of the American and Southern Dental Societies, at Louisville, Ky., the conductability of heat and cold through filling materials.

He says: These may be divided into classes, the metals coming first as the best conductors, the difference between them being slight. Next comes the cements, the oxyphosphates being a shade poorer than the oxychlorides; then the gutta-perchas come last although far from being a non-conductor, not even equaling enamel. He further says that the oxyphosphates and oxychlorides are such comparatively good conductors of heat and cold that they should not be used alone for capping pulps exposed or nearly exposed. That such pulps should be protected by a layer of gutta-percha fully 1-16th of an inch in thickness when possible.

Gutta-percha I have used very little and hardly feel like saying much about it, but from what little experience I have had with it I should be afraid to use it in such quantity as Dr. Kells recommends for fear of expansion; would rather depend upon varnish.

One other combination I wish to speak of, although perhaps not strictly belonging to the subject.

Some four or five years ago I filled a bicuspid approximately with amalgam, not thinking of any possible chance of thermal trouble. A few days later the patient returned, saying she could not take cold water or breathe cold air into her mouth without pain in this tooth. I tried several remedies, but to no avail; the trouble still continued. Finally I drilled into the crown making a small cavity which I filled with gold in such a manner that the gold came in contact with the dentine of the tooth and the amalgam filling, when the trouble ceased. Since then I have treated one or two other cases in the same manner with equally good results. In a paper read by Dr. Stockwell† before the Odontological Society of New York, he explains this action thus: In regard to the question of thermal influences there is no doubt but that Robinson's foil is a better non-conductor than gold, and this would in part at least account for the immediate favorable results. But there can also be little doubt that the galvanic action set up by this combination taken in connection with the fluids of the mouth, lends our impulse toward the removal of those physiological sensations resulting from thermal influences. There can be no doubt at all that the combination of amalgam and gold when placed in contact with the teeth and fluids of the mouth will create an electric current, and I am assured by competent authority that when a tooth is so filled the current will flow in the following direction; namely, from the amalgam down through the body of the tooth to the pericementum, from it to the saliva, and from it, or through it to the gold.

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* *Southern Dental Journal*, Oct., 1888, page 415

† *Dental Cosmos*, Dec., 1887, page 737.

All this proves to my mind that combination fillings of gold and tin, or gold and amalgam, should be classed among the pulp protectors.

Prosthetic Dentistry.

[This department will be devoted exclusively to Prosthetic Dentistry, including Crown and Bridge-Work. We shall be pleased to receive from our readers such practical contributions, short items or queries upon this subject as they choose to contribute.]

REGULATING TEETH.*

BY DR. H. H. HARRISON, WHEELING, W. VA.

I HAVE been asked by your committee to read a paper on the announced subject and am glad to do so, but will not promise to stick very closely to the text. We all know that every case has its own peculiar phase and we must only speak in generalities, and will not try to cover any special case only as it may serve our purpose best.

It is almost wonderful the transformation that takes place in some persons appearance by the well applied genius of an expert in these operations. Indeed the features of the human face may be made beautiful by art where nature through its abnormal freaks may have left the person a conglomeration of ugliness. The fact is that a well formed mouth with beautiful teeth adds as much to the beauty of the face as any other feature belonging to it.

The beauty of the speaking eye with its penetrating, intellectual and affectionate attributes can scarcely add more to the loveliness of its possesor, that the pearly row of teeth partially hidden by the rose tinted lips held in beautiful contour by a well formed jaw. These very important qualities can almost universally be possessed if the proper attention be given and the proper service be obtained. To do this intelligence and skill must be in the possession of the dentist that he may be able not only to perform any prosthetic aid necessary, but also direct his patients that they may be able to get the benefit of the science and knowledge that has been developed for their good.

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* Read before the Ohio Valley Dental Society, held at Wheeling, W. Va., January, 1891.

Children from babyhood should be looked after very carefully that the coming of the first teeth may be observed as well as the development of the jaw, for here is where the first trouble frequently arises. I just now call to mind several cases where the mouth protrudes to an unsightly degree and all produced by sucking the thumb while an infant. It must be borne in mind that in early life the bones are very soft and yield very readily to continued pressure, and hence many children have deformed mouths by keeping playthings in the mouth too continuously. This not only makes a bad contour of face, but places the teeth in a very unnatural position.

It is claimed by some theorists that the main cause for irregularity of the teeth is inheritance—the child inheriting from one parent a small jaw and from the other parent large teeth. However this may be, I am persuaded that there are other causes as potent as this one in bringing about such results. Constitutional influences such as defective nutrition, diseased condition of the mother or child during the formative and eruptive periods have more to do with this abnormal result than any other save the local pressure mentioned above. It is very true that inheritance has very much to do in such cases too, but not with most of the extravagant cases brought to our notice. But I must not dwell too long on causes and conditions, but speak of the remedies and their results.

Of course the manipulations and appliances to be used must necessarily vary as the conditions and requirements indicate.

Many cases can be best operated upon by simple thumb pressure in early life, but the more difficult cases, and especially in older patients, require more heroic means. In the more obstinate cases the jack screw, bands, springs or ligatures must be used, and in some cases plates must be made to spread the arch of the palate, in order to get more room to bring the teeth to place.

The age at which these operations should be commenced varies in different persons just in proportion to the development and growth, but perhaps the age of thirteen is the earliest that is best to begin as a rule, or possibly about the period when the permanent cuspids are being erupted.

The most frequent deformity to be met with is that produced by the cuspids not having room to come to place, which may be overcome by spreading the arch or the removal of the second bicuspid or first molar, and then by ligature drawing the bicuspids back, at the same time using a ligature over the cuspid to draw it into place. I have seen some cases, however, where the cuspids have but very little process externally and the articulation of bicuspids and molars is so perfect that my judgment would lead me to sacrifice the cuspid instead of making a change in the others. This I am aware would meet with strong opposition by many operators, but no matter it is the best practice under certain circumstances and does not produce the deformity that many would have you believe. Have tried it and know whereof I speak. But of course this should be done only where the other operations are contraindicated.

Then we have cases where a central incisor above may close inside the lower teeth while all the rest are in their proper place save a little contraction of space by the adjoining central and lateral. This can be best overcome by making a plate to fit the palate and the same time cover the bicuspids and molars to keep the teeth apart until the displaced tooth is moved so far forward that the lower teeth may close inside when it will be held to place by the lower teeth. This is the plan of operation for several teeth as well as one.

Then we meet another kind of condition where the incisors are turned, with their lateral surface to the front, displaying the edge of the tooth. This requires the tooth to be turned in its alveolus, which can readily be done (after proper room be made) by fitting a band around the tooth with little spurs on it and looping over these spurs a piece of rubber tubing and fastening to other teeth.

But by far the most unsightly cases and the most difficult to handle cannot either be accurately described or the plan of treatment explained. They are the cases where nearly all the teeth are out of place making the persons look more like an animal than a human being, and can only be treated by establishing in your mind what should be done and bringing each tooth to place singly, and after the first bring the others to place very much after the manner of a sculptor who pictures in his own mind an object of beauty and thus makes his chisel cut away until that beauty stands before him in all its loveliness.

But I must not take up too much time on this department of irregularities for there are others claiming our attention. In these days I think we see more deformities of the mouth as produced by art than we do by nature, and cases too that are very much easier handled. I refer to the making of artificial teeth, as well as putting on crowns.

In making teeth the aim should always be to restore as nearly as art and science can do that which was lost when the natural teeth were taken away. This I am glad to say is done by the best operators, but the fact is that three-fourths of the teeth made are not made by the best operators, because his time is too valuable and he cannot compete with the unskilful and unscrupulous, neither in price nor time. Hence we see people whose appearance is so thoroughly changed that they are only the ghost of their former beauty. You see people with rugged outlines in features, tall and angular with dark complexions wearing short, small and white teeth, just the opposite of the demands. Then you see others with thin visage, slim build, wearing broad, evenly formed teeth, possibly hooked inward when nature may demand an outward inclination. They may answer the purpose of mastication, but probably not half so well as they ought to do. But they are a set of teeth and may cost $10. I just now recall a beautiful young lady that was so unfortunate as to lose her teeth at the age of seventeen, and was wearing a set of teeth that might have been appropriate for a man of fifty whose beauty had been prematurely lost, or never had any, and she was not aware of the inappropriateness of the teeth. Let us try to correct these irregularities and educate those that are not educated by precept and example that they may see for themselves that it is not every man that hangs out his shingle as a dentist that is worthy of the confidence of the people.

There is another, and the last irregularity of which I shall speak, that should not be overlooked. It has generally been understood that mechanical skill is all that a dentist needs to practice his profession. I beg leave to differ from such persons. Any person who would think for a moment must see that the dentist who has any claim to be scientific must necessarily be acquainted with the organs that he treats. Not only the anatomical structure, but the physiological as well as pathological conditions. Not only is it necessary for him to know *this*, but he must know everything that has any bearing upon these organs, that he may intelligently direct for their good. It is well known that the human organism is so chain like in its character that one part cannot be diseased without a liability to transfer its signals to another. This is done through the nervous system which is very much akin to a net-work of electrical wires. For instance, I once knew a case with great pain at the base of the brain that was treated as meningial trouble that upon consultation with a dentist was found to be a diseased wisdom tooth, and the pain was conveyed from it along the fifth pair or trigeminal nerve to its source at the floor of the fourth ventricle of the brain; proof, the tooth was extracted and the disease subsided. Again the teeth very frequently suffer from improper nourishment which condition should be recognized by examination and proper treatment instituted. And as it is evidently not in the line of the general practitioner of medicine the dental profession must be able to do this as well as treat all diseases of the mouth both surgically and otherwise, which includes hemorrhages after extraction, all kinds of tumors and abscesses. It is not an unfrequent thing to see cases of hyperemia of the mucous membrane caused by an abnormal state of the secretions which is very annoying to the patient and finally results in alveolar absorption; if it becomes chronic eventually destroys the teeth.

These with many other conditions must be treated by the dentist if he be expected to do all that can be done for the good of the teeth. The best people expect this of us, and the best M. D.'s have left this to our care, and none but the weak men in the medical profession will overstep this boundary unless the dentists should fail to do their part. I know physicians have treated many cases properly belonging to dentists, but those cases have either fallen into the hands of unskillful dentists or unprofessional physicians.

And now let me close my paper by begging your pardon for bringing into my subject so much "regulation." I told you in the beginning I should not stick close to the text.

SUGGESTED CHANGES IN PORCELAIN TEETH.

Prof. Haskell, of Chicago, in the January number of the Ohio Journal, criticises the manufacturers of porcelain teeth for not manufacturing them in accordance with his ideas of what artificial substitutes for natural teeth should be, asks why dentists are compelled year after year to use such deformities.

The writer has had no small experience in the sale of porcelain teeth of more than one manufacturer. His experience is that manufacturers endeavor to meet the demands of the dentists and that improvements are oftener the result of the study of the manufacturer than of his customers. I think it safe to say that perhaps a majority of the dentists desire the very teeth that Dr. Haskell condemns, and they are probably to-day in greater demand than they would be if changed to suit Dr. Haskell's ideas. The demand is for short-shut dentures, and so great has been this demand that to meet it manufacturers have been compelled to make the bicuspids with longitudinal holes through them, doing away with pins entirely, in order to get them short enough. The long concave blank space below the pins is precisely what a very large proportion of dentists desire.

It is a fact that in many respects the manufacturers are ahead in practical ideas, and manufacture forms which find but little sale until their advantages have been repeatedly explained and shown. Moreover, the immense variety in sizes and forms now on the market would seem to insure that any one could find the sort of teeth which he needed.

The trouble is that a few like Dr. Haskell think that all teeth should be made according to their ideas, and that all dentists should be compelled to use them, whether they suit their ideas or not.

One thing is certain: the manufacturers are glad to furnish whatever there is a general demand for, and *do* furnish many styles for which there is so little sale that the cost of the moulds is not covered.

The trouble is rather with the dentists than the manufacturers, some of whom at least are entitled to great credit for their efforts to provide forms adapted to every possible case.

A Traveling Salesman.

THE ABUSE OF BRIDGE-WORK.

Bridge-work has taken the place of gold plates to a certain extent. Still, however good a thing it may be, it also is greatly abused. In my mind, a bridge is not a practical denture when it has to span the entire arch supported only by three or four roots, or, say teeth. It has no superiority over a gold plate in such a case, because the latter can be kept clean, while the former can not, and the best of bridges must be removed at times to be reset. The chief objection to a full case of bridge is its becoming loose, which is no doubt caused by the unbalanced movement of the roots, as pressure or weight cannot be brought to bear upon three spans surmounting four pieces at the same time; one piece will surely give way to the undue strain.

The abusive use of open-face crowns must not be overlooked. These classes of crowns for bridge-work should never be used, as they are simply not practical. We have yet to see one which will last any length of time. They have no strength nor durability. One of their weak points is the band around the labial surface of the tooth which in course of time cracks. Another is the free access which the secretions have to do their work upon the cement which holds the crown in place.

We are taught that a cement filling is not a permanent one, and especially should not be used below the gum border; but we are advised to use open-face crowns and to set them on with cement. If cement will not last when put into a cavity of a tooth at the gum line, we should hardly imagine that it would last very long when only protected by a thin gold band placed below the gum line, where secretions have continual play at it.

Another class of bridge-work which should be done away with is what is called pin bridges, where places are bridged over, getting the necessary support by drilling cavities into sound teeth to insert the pins necessary to support the bridge. This is a class of work which simply will not last, owing to the lack of proper strength required to support a denture of that sort. If a good tooth must be sacrificed, why not crown the necessary teeth and get something from the start that will be of lasting service?

In my mind it is far better to have a bridge rest fully upon the gum instead of having a shelf-like projection over the ridge. It is said that the advantage gained from this class is its cleanliness, as there is no way for the food to become lodged during the process of mastication, as is the case with the shelf-projecting bridge. One would naturally imagine that food could find its way underneath, between the gum and the teeth, but strange to say, there is very little that ever finds its way to those places.

In closing, I will offer a suggestion which may, or may not, be new to you. It is this:

For investing material, I recommend common moulding sand, in proportion of one-half plaster and one-half sand. After allowing the mass to set hard, trim it down to suit the case invested, and then with a hair-brush paint the upper surface with a solution of borax water. The advantage of the use of sand as an investing material is that from the change of the color of the mass from a deep yellow to a lighter shade you can perceive the exact moment at which your case is thoroughly dried out. The borax has the property of preventing the mass from splitting. Its greatest qualities are its strength and non-contractible porperties, it having an advantage in this respect over pumice, asbestos and other materials generally used for this class of work.—Dr. W. M. Bartlett, *Archives.*

MAKING AND SETTING CROWNS AND BRIDGES.

Dr. B. O. Doyle, Louisville, Ky., says in a paper read at the Kentucky State Society and published in the *Dental Review:* After all the carious matter has been removed the nerve cavities are filled with cone-shaped silver wire cones which project above the gum line to any required length. The silver wire cones are first amalgamated or covered with a thin coating of soft amalgam and are barbed if need be, and driven in place by a few light taps of the mallet, after which amalgam is packed around them until the root is restored to such contour as may be desired. After the amalgam has consolidated, say at another sitting, any further alterations of the shape of the root may be attended to. I have always found a root built up straight or very slightly cone-shaped, the best form. Now, as you all know, there are very many devices for getting the measurement of the root for making the gold collar which fits at and under the gum. I have tried them all, and I now do no fitting of gold bands in the mouth, but rely wholly on a metal cast, an impression of the root or roots, prepared as just described, is taken in modeling compound which is thoroughly chilled before removal from the mouth, an articulation is taken with wax, a plaster model is made from the impression, the cast is trimmed away at the cervical border to allow the gold band to pass under the free edge of the gum and up to the alveolar border. A metal cast is then made of fusible alloy by first imbedding the plaster cast in the fused alloy, after removal of plaster model a metal die is made by pouring into the counter model, in this way you have a fac-simile of the plaster cast in metal, to which the gold plate, which is to be used in construction of the crown, can be applied, the metal cast and wax articulation is now placed in an articulator, and you can proceed just as well as if the patient was present.

If the crown is carefully made no alteration will be necessary and it is ready to be applied to the root. I have on several occasions made bridge pieces by this method, which were never tried in until completed. Use Hill's Stopping for attacing crowns and bridges as follows: first have the root *thoroughly dry*, and coat with a thin solution of Hill's Stopping in chloroform, dry with hot air, warm the crown with a sufficient amount of the Stopping inside to proper consistency, and then place in position *rapidly* with hand pressure. An opening should be made in the crown for escape of excess material. When the crown is in position chill thoroughly with ice water, after which fill the opening in the crown with gold wire, or foil.

GOLD INLAYS.

Dr. J. A. Swasey having been requested to impart his method of inlaying in detail, gives the following description of the process in the *Dental Cosmos*.

Regarding the question of inlays, it has been and is now my custom to prepare the cavity as for a gold filling, having the edges rounded, and, if an approximal cavity, obtain plenty of space between the teeth by previous separation with cotton or rubber. If there are any undercuts, I fill them with wax, so as to allow me to take an impression with modelling compound, using a small tin cup which I make, covering one or two teeth. If the cavity is properly formed, a perfect impression can readily be obtained.

Then I get a plaster model; from that an impression in moldine, and with Melotte's metal poured in it I get a sharp die; then swedge up pure gold of about 50-gauge, trim the overhanging edges of the gold, then place the gold in the cavity, and if the impression and die are accurate, the result is an inlay that fits perfectly. If, however, there is a slight discrepancy, or to make it doubly sure, I use a piece of as soft erasing rubber as I can procure, or a block of pure rubber, placing it over the inlay while in tooth, asking the patient to close his mouth. Of course, the gold should be annealed occasionally during the operation.

Then I remove carefully and immerse in hard-coal ashes and plaster, being careful that it does not run over the edge of the inlay. After it becomes hard, I then proceed to fuse into the inlay twenty-carat gold in small pieces, using a large flame, with which I have better success than with a small one, continuing until the cavity is even full; then, if I wish any portion of the inlay contoured I add more of these pieces, using a very small flame and fusing only the portion I wish to contour. Then I cut a groove to receive the cement, and finish in the same manner as in gold filling. If possible, I never finish until the next day, as the work sometimes destroys the cement, therefore it is safer to delay finishing for twenty-four hours.

CAPPING ABRADED TEETH.

I HAVE always believed that the abrasion which we find upon the teeth was more or less mechanical, where it was not associated with decay, but a case came into my hands wherein the abrasion or wasting away of the enamel was equal both on the labial and the palatal surfaces, and the teeth had become so thin that nothing could be done with them in the way of filling. The labial surfaces of the front teeth were discolored, but the palatal surfaces were perfectly clean, white, and smooth. I relate this merely to describe the treatment or mechanical appliances I adopt in the restoration of this class of teeth. In this case I covered the teeth with thin platinum and gold caps, making the caps to fit the teeth as closely as I could; first making a band to fit around the cervical margin of the tooth, then slitting it down while in the mouth, and bending it to fit the tooth perfectly. On the ends of these bands I soldered a little strip across, making a box; then took pieces of porcelain, and ground them thin, and put faces over these gold caps, soldering the face to the cap, and set them zinc-phosphate. On the centrals and laterals I worked in that way, and on one of the bicuspids and the cuspid I made the boxes slightly different. It is a method suggested by Dr. Schofield. I made the caps similar to the ones I just spoke of, but instead of soldering the porcelain directly upon those caps I made a horseshoe band down towards the necks of the teeth, slipped it up towards the proximal edges, then put a piece across the end of it, and cemented a piece of porcelain on to this little box,—for the purpose of giving strength for masticating.—Dr. Littig, *N. Y. Odont. So. report*, *Inter.*

A NEW METHOD OF MAKING DIES.

Dr. Theo. F. Chupein suggests a method by which a lead counter-die can be used in connection with a Haskell Babbit-metal die. As is well known, the Babbit-metal melts at a much lower temperature than lead, and if an attempt is made to pour lead—however chilled it might be before pouring—on a Babbit-metal die, the two will adhere. To overcome this annoyance, Dr. Chupein uses a Lewis Moulding Flask. The cone-shaped top is inverted and filled with sand; the thin plaster cast—having previously been *thoroughly* dried—is then laid on it, the ring put in place, and the lead poured in. When the lead is cold, the plaster model and sand are removed, the flask reversed, and the Babbit-metal poured into the lead counter through the cone-shaped orifice. In short, this method is reversing the usual way of making dies and counter-dies, and will save considerable trouble in overhanging models, where it becomes necessary to make cores in order to draw the model out of the sand.—*Advertiser.*

PORCELAIN TOOTH-CROWN WITH GUM.

Fit a platinum collar and cap to the root-end and perforate the cap to allow a platinum post to be pushed through into the root and project a little from the cap. Select a pinless, plate, rubber, or other porcelain crown; fit, articulate, and wax it to the cap and post, and remove for vertical investment in just enough plaster and marble-dust or asbestos to hold the parts together. When set, remove the wax and fill with porcelain body, dry thoroughly, and biscuit about three minutes in a Parker-Stoddard furnace. So soon as cool enough to handle, carefully cut the investment away from the crown and the cap, add body to fill the cracks, and fuse in the furnace. If the gum has receded from about the neck of the root, gum-enamel can be modeled over the collar, and the final firing (with but one investment) will produce a very artistic restoration of both crown and gum, to be mounted with cement as usual.—Dr. W. M. Sharpe, *Cosmos.*

Compilations.

"Gather up the Fragments."

THE DENTAL PULP. ITS DESTRUCTION AND METHODS OF TREATMENT OF TEETH DISCOLORED BY ITS RETENTION IN THE PULP CHAMBER OR CANALS.*

BY A. W. HARLAN, M.D., D.D.S., CHICAGO, ILL.

* * * When the pulp is to be destroyed, the cavity of decay should be bathed or syringed with warm water, 110° F. to 130° F. The crown, if there be sharp corners, should be trimmed with chisels, or in any way most familiar to the operator. A little square of rubber-dam, two inches or thereabouts, should be slipped over the tooth and the one adjacent (if it be present) and the pulp is then exposed, and vinum opii or any anodyne applied (not carbolic acid) for a minute or two. After which use the following:

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* From a paper on the above subject published in the Dec. *Dental Review*, we make the abstract of Dr. Harlan's method of treatment, which is well worthy of study by every practicing dentist.—Ed.

℞ Acidi Arseniosi, ʒi.
Hydrochlorate of cocaine, ʒij.
Lanolin ad. q. s. to make a stiff paste.

A small quantity should be applied directly to the exposure on a little square of gummed paper about 1-16th of an inch in size. This should be covered with a pellet of cotton dipped in liquid vaseline and the cavity is then to be stopped with soft gutta-percha, or if there be time enough a paste of oxyphosphate of zinc may be used. If the patient is an adult (more than 21 years of age) the arsenical application should remain 48 hours. If under that age and more than 12 years 24 hours, under 12 years 8 to 12 hours is long enough. When the patient returns at the appointed time the little square of rubber-dam is reapplied and the dressing removed, water and saliva must be excluded from the tooth. Nothing should be placed therein unless the operator uses it himself. Apply to the cavity immediately a pellet of cotton saturated with dialysed iron to antedote any arsenic adherent to the pulp of the cavity of decay. The first thing to be done then and there is to puncture the pulp with a fine sharp-pointed instrument. A little blood will escape which is carefully wiped out. Apply some peroxide of hydrogen on cotton with nickel-plated, platinum or gold pliers until the blood is destroyed. Gently wipe the cavity with oil of cassia, absorb the excess with paper or lint and then apply directly to the pulp a square of paper fiber-lint, wet with a saturated solution of tannin in glycerine, cover this with gutta-percha, or if the pulp appears to be still sensitive, apply at the same time a pellet of cotton saturated with myrtol, then seal the cavity with gutta-percha, and make two perforations through it with a pointed instrument not larger than an ordinary steel or brass pin. Dismiss the patient for eight days.

At that time everything is favorable for the complete removal of the pulp. Extravasation of blood in the pulp cannot occur after the application of tannin. The blood disks are held intact and in consequence of the avidity for water possessed by glycerine and tannin, it is all extracted from the pulp—which presents itself as a shrivelled desiccated body easy of removal at this time. On account of the concretion of the pulp which has really been tanned, there is little or no difficulty in its complete removal. There will be no hemorrhage, because a separation of the dead portion from the living will have taken place. On account of the concretion, due to abstraction of the serous portion of the pulp, it will be tough and elastic. It may be removed entire from the root or roots and immediate root filling may be practiced. Before this is attempted the following precautions must be observed: No water or saliva should be allowed to gain access to the pulp chamber or canals, as this would be fatal to the maintenance of the color of the tooth. Complete desiccation of the canals should be undertaken because on its faithful performance the future stability of the tooth depends. This may be accomplished in several ways. First, heat from an electric or other cautery. The Evans or Woolley root dryers may be used. Second, by the rapid evaporation of chloroform. Third, by the use of boro-glycerine or aqua-ammonia, and Fourth, by using absolute alcohol to excess, that is by filling the pulp chamber and canals with absolute alcohol and dissipating it with hot blasts from a syringe and repeating this until absolute dryness is secured. When this is accomplished filling of the root at the same sitting is indicated; nothing will be gained by deferring this operation. Filling of the root is made possible in the following manner: Eucalyptol is introduced into the root on cotton or otherwise and after the excess is absorbed with paper cones, a creamy solution of gutta-percha in chloroform is pumped into the root or roots until they appear to be well filled. Then slender cones of gutta-percha are introduced into the root by heating a fine broach which is thrust into the large end of the cone and carried directly to the apex, displacing the solution of gutta-percha and filling all interstices or foramina which may have been unnoticed.*

The object in first using the eucalyptol is to facilitate the diffusion of the gutta-percha as it is a solvent for it and it permits the complete filling of the root. It will be noted that no coagulants are used in this final treatment of the root made pulpless by the first application of arsenical paste. This paste is so composed that absorption of the arsenic is assured at once, as lanolin is known to be the agent which more easily facilitates absorption than any other known agent, unless it be chloroform

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*The writer speaks dogmatically on this subject, but he is not unmindful that there are other meritorious methods of pulp treatment, pulp destruction, and pulp-canal filling. The methods here spoken of are intended to be complete in themselves—simply a system to be followed as a whole—for beginners as well as older practitioners.

—which cannot be used on account of its volatility. Although it may seem tedious to follow me, it will be found by this method of treatment of the dental pulp no portion of its substance is allowed to remain in the tooth to be decomposed and discolor the dentine or enamel. The usual methods of removal of the pulp, including its destruction are to say the least faulty. There is a hap-hazard sort of hit or miss about the prevalent practice which is inexact but disastrous, but to which many practitioners are wedded by long years of routine. The practice which I present to you to-day is based on a study of the subject of prevention of discoloration of teeth by an exact method of treatment of the dental pulp from the time it is doomed to destruction until the root is filled. Failure to observe any of the precautions laid down in this treatise will be considered cause sufficient for failure. There is no possibility of those peridental disturbances previously mentioned, occurring, if the details are followed with accuracy, for the following reasons:

First. Rupture of the blood disks will not occur when tannin is placed in contact with them. Second. The bulk of the pulp is reduced by the actual contact of tannin and glycerine with it, due to the abstraction of water. Third. It is concreted and rendered coherent by this treatment; in fact it is tanned. Fourth. There is no hemorrhage after its removal, because it is separated from living parts in a perfectly physiological manner, as is noted in the separation of an eschar from an open wound. Fifth. The root may be filled at once as there is no irritation at the apex. Sixth. The whole process of treatment from the initial steps are aseptic, hence the tooth and its surroundings are in the best possible condition for the completion of the operation by filling the roots. Seventh. The process of filling and the manner of its accomplishment precludes the idea that there can be any subsequent discoloration or destruction of the animal matrix of the tooth as there is no coagulated body or its analogue to be destroyed by anaerobic microbes or permit the evolution of mephitic gases on which the future discoloration of a tooth depends. The complete discoloration of the substance of the dentine depends on the retention of blood or a portion of the pulp chamber or canals, or the use of coagulating agents following the incomplete removal of the pulp. Much of the discoloration of teeth depends also on the fact that dentists will not exclude water and saliva from pulpless teeth. The usual methods, as you well know, are to apply arsenic or an anæsthetic, and after the removal of the drug, allow the mixed fluids of the mouth to enter the pulp chamber or canals. Water is one of the worst agents which comes in contact with a dead pulp as the coloring matter of the blood is abstracted by its presence; hence you will see the necessity for excluding it from a pulpless tooth when you have destroyed it yourself.

I assume that more pulps of teeth are destoyed by dentists, than die spontaneously or by general exposure. If this is not true, it is true that dentists fill more teeth where they destroy the pnlp, than they fill of those which come to them to be filled after pulp-death by other agencies or causes. It is on this account that I beg of you to adopt a method of destruction of the pulp which will least endanger the future discoloration of the visible crown. Nothing is so unsightly as a discolored tooth exposed to view. It lies with you as teachers and operators, to prevent this wholesale disfigurement of the human face, by changing your usual modes of practice and adopting one that will give the minimum of unsightly teeth instead of the maximum, so enormous that at least 15 per cent. of those persons operated upon by dentists give evidence every time their mouths are opened, that they are victims of a routine practice which has no excuse for its further continuance.

BLEACHING TEETH.

In continuation of this subject we are compelled to adopt some means of restoring to presentableness, teeth already discolored by barbaric methods or blackened by accident. It matters not what the original cause may have been, there are teeth to be whitened and made less hideous to the beholder. At this time I cannot review all the methods of bleaching or whitening, but will present for your consideration a few observations deduced from a study of the whole subject.

One method of bleaching teeth which has not received the attention it deserves is the following: Method No. 1. The root having previously been filled, all decay is removed from the cavity, and it is thoroughly washed with aqua calcis. A freshly prepared solution of chloride of lime is placed in the tooth and this is in turn gently touched here and there with a dilute solntion of sulphuric acid, less than three per cent. of acidum sulphuricum dilutum. This will liberate the chlorine, which will bleach the exposed discolored dentine. Rewash the cavity with lime water and repeat the process as before, when it will generally be found that the tooth is satisfactorily bleached. The theory of this process is that the coloring matter is so altered as to become soluble in the alkaline lime water and the bleaching is complete. Carbonic or tartaric acids may be substituted for sulphuric by this process.

Method No. 2. The cavity of the tooth having been freed of grease, serum and decay, is washed in a dilute solution of soda. Freshly dried aluminum chloride is placed in the cavity and Labarraque's solution of chlorinated soda is introduced on cotton with a pair of platinum, wooden or gold tweezers. The chlorine is liberated and the coloring matters are thereby rendered soluble in a solution of carbonate of soda, which may be used to wash the cavity.

Method No. 3. Wash the cavity with a solution of biborate of soda, introduce dried aluminum chloride and add freshly prepared, or at least a freshly opened, quantity of hydrogen peroxide. In a short time, three or four minutes, the bleaching will be effected by the decomposition of the $Al_2 Cl_6$ in the tooth and the coloring matter having been rendered soluble in solution of carbonate of soda, may be washed out and this process is complete.

Method No. 4. After cleansing the cavity and removing all visible decay, wash it well with a solution of barium hydrate, then place powdered alum in the cavity and add a solution of chlorinated soda, which will completely decompose the alum and, after the bleaching is effected, the cavity must be thoroughly washed with a solution of sodium carbonate and dried.

Method No. 5. [There are a number of processes of bleaching not here mentioned which may be found in current journalistic literature, to which the reader is referred. The reaction of the different processes might have been written out but it was thought to be unnecessary for the purpose of this paper]. A freshly prepared solution of sodium hypophosphite is introduced into the tooth and a jet of carbonic acid is directed on it for a few minutes when the tooth will be found to have attained its original color. The cavity must then be washed with an alkaline solution and dried. It would not be profitable to further dilate on this interesting subject, but you will permit me to offer the following suggestions: 1. The root must be filled before the bleaching process is begun. 2. The rubber dam must be used. 3. Ordinary hydrant water, rain water or even distilled water must be kept out of the tooth. 4. Steel or iron instruments must not be used. 5. After the bleaching is done oxychloride of zinc of the proper color should be introduced at once. 6. When this is well hardened the gold filling must be made immediately. 7. If the labial wall of a tooth has only the enamel remaining, the interior of the cavity must be varnished with copal-ether varnish, with a bleached brush and pure white glazed paper of suitable size is carefully packed against the labial wall. The paper must not be creased or folded. The above and other precautions are to be observed in the bleaching of teeth in order to secure a satisfactory result. I can assure you that it is often a tedious and trying operation when followed with the minutest detail and persevering faithfulness, but success is assured when all details are followed.

MORALS OF DENTISTRY.

A CARD was published by a dentist some time ago giving the names of prominent persons, among others a list of clergymen, from whom he had excavated successfully and without pain certain diseased molars. The dentist, in making the operation painless, has spoiled a proverb—"it comes as tough as drawing teeth." Still we are glad that these clerical brethren, without suffering, have shed their masticatory instruments. We would have almost any one else hurt rather than they. They are not of the beligerent sort, who are constantly "showing their teeth," and we therefore could have no joy in their painful extraction. May the remaining incisors and bicuspids of these brethren be spared, and the time be long distant when Soloman's description shall apply to them: "The grinders cease because they are few." We now seriously call the attention of all young clergymen to the importance of ecclesiastical dentistry. When a minister's teeth begin to decay, his theology is apt at the same time to suffer. Poor teeth result in poor mastication; poor mastication in poor digestion; poor digestion in poor spirits; poor spirits in poor theology. Keep out of your mouth all poisonous dentrifices;

do not wear off the enamel with your pen-knife or pin ; annually submit yourself to the inspection of a wise dentist ; twice a day at least, with a strong brush, keep your mouth as pure as the Gospel that drops from your lips. An untidy minister, neglectful of a full-length bath, his finger-nails unscraped, his knuckles begrimed, his collar looking as if it had lost its way to the wash-tub, and his teeth tobacco stained, is as disgusting to us as the Egyptian mummies in the British Museum, which lie grinning with their decayed molars exposed, three thousand years of bad toothache. There might seem to be some excuse for the wicked postponement of dentistry if it were excruciating as it used to be. In boyhood, after crying all night, laudanum and camphor and everything else having failed, father took us to the village doctor. The doctor led us to the back piazza, and we sat down on the step. Whether we were promised candy, or a ride, or a new pair of boots, we do not remember, but suffice it to say the inducement did not seem adequate to pay for the sufferings proposed. The doctor brought out a long pair of forceps. There were in its very looks twists and grips, and clutches that made the toothache instantly stop. Then we argued the uselessness of extraction, because it did not ache a bit. They did not allow us to finish the argument. We were never more logical in our life. We had laid down the two propositions of a syllogism. First, painless teeth ought not to be extracted ; secondly, this is a painless tooth ; but before we could draw the conclusion the doctor had begun to draw the tooth. We sitting on the step, and he standing over and above us, took our head between his knees, one knee tight against each ear. The memory of those knees will never fade away from us. They seemed to be the *ne plus ultra* of all knees.

He had hard work to get into our mouth, for it was so full of acclamation, or what boys calls "holla," a word so expressive that we never found its synonym. But getting his hand on one side the unrestrained yell, and his turnkey on the other, he went in. But at last the cold steel was laid aside the sore gums, and while we were clutching the doctor's arm, and biting his finger as hard as we could, and kicking indiscriminately in all directions, and giving him a look as much as to say : "Old fellow, if I live to get over this, won't I give it to you," the doctor, with knees still more tightly braced, gave one resolute pull, and it seemed as if the roots of the neck had given way, and the jaw-bone had forsaken its socket, and everything, down to the last joint of the toe, had been dislocated, grubbed out, smashed, caved in, and annihilated with a general convulsion. The operation was successful. The dentist only did his duty, and has been for some years in the good place where teeth never ache and they never use forceps; but my memory of him is not ecstatic. We do not take him into our hope of future recognition. We can think of five hundred people whom we would rather meet than he. But in this day things are made easy. According to the advertisement, tooth-drawing has passed into the luxuries, and the dentist's chair is almost as easy as the editor's.—*Editorial by Dr. T. De Witt Talmage in Christian Herald.*

Editors' Specials.

"Write the Vision and make it plain."

A REMINISCENCE.

At the close of the session of the Ohio College of Dental Surgery, in 1854, the seniors were all brought into the same room with the Faculty, and the Examining Committee, consisting of one for each member of the Faculty. On this committee was our venerable friend Dr. Chas. Bonsall, and among the seniors was Dr. M. W. S. Kendall. The one was a feeble man physically, the other a prodigy of muscular strength. Dr. B. said, Mr. Kendall, how would you extract an upper right molar tooth? Mr. K. said, I would take a well adapted upper right molar forceps, seize it by the neck, and draw it out. In what direction would you first apply your force? Downward, said Mr. K. Wouldn't you make slight pressure outward, or inward? I'd prefer the downward. What do you mean by "downward"? said Dr. B. Let the tips of the roots bound a triangle, and perpendicular to the plane of that triangle I would call downward, said Mr. K. Did you ever extract upper molar teeth? Very often, said Mr. K., who had been a practitioner before coming to college. Do they come out that way? They do so far. What if they would not, said the doctor. I never thought of such a possibility, said Mr. K.

The Faculty and the rest of the committee were smiling, in the belief that the difference in strength of the examiner and the examined was sufficient explanation of their different modes of performing the operation.

But that is not a full explanation. Difference in muscular power is something, but not all. The present writer never had enough power in both arms to raise his body a half inch, yet he was in the habit of extracting upper molars by the "downward" pressure. This is a question of some importance, inasmuch as the extraction of teeth is not going out of fashion for some time. One of our teachers used to direct us to "shake the tooth thoroughly loose, and then extract it." We always preferred to not be the patient when these directions were followed. Ordinarily each shake in the loosening process, hurts worse than proper, judicious extraction. Whenever practicable, the pressure should be continuous throughout, and it is very important that it be in the proper direction. In the tooth spoken of above, viz.: the upper molar, we used to make steady traction in the longitudinal direction of the palatal root, leaving the other roots almost out of consideration, and the pain was slight in comparison with that inflicted by the shaking process.

Some operators stand in such unnatural positions that they have almost no muscular power to spare for the effort. Leave the muscles concerned in the operation free, and stand so that every part of the operation can be closely watched. We recollect an esteemed father in the M. V. A., whom we all respected, who would take careful hold of the tooth, and then turn away his face, and shut his eyes while extracting. He didn't advise his pupils to do so, nor do we.

But we have no thought of writing an essay on extraction, though we believe we could make it profitable, by "giving our whole mind to it."

HYPERBOLE, EXAGGERATION, LYING.

There is a shade of difference in the three words forming our caption. Some words are smoother and less offensive than others of the same import. A late leader of thought once remarked that the classical derivations are handy, and peaceful if you mean nothing; "for example, to say that it is an equivocation is not expressive, but you lie, sir, are the words that come to the surface when you are in earnest."

Some subjects seem to naturally lead in the direction of our caption. It seems natural for many men to lie about horses. But nothing connected, directly or remotely, with our profession, has caused so much lying as has the extraction of teeth, but the falsehood generally comes from the victims. They will tell their experiences to each other, and to successive operators, if they will listen to them.

And in view of the fact that tooth extraction is the most common of all surgical operations, as well as one of the most painful and that it was, and sometimes is yet, performed with an instrument that gives the patient legitimate warrant to sue for malpractice, in every instance of its use, it is not strange if the victim lies, and even swears a little. The instrument is so outlandish that society has not fixed on a definite name to define it, but it is called turnkey, pullikin, canthook, drawers, etc.; and as well, no man that I have met is able to explain its mode of action in the extraction of a tooth.

When we were young we sometimes took notes of the hyperbolical statements made in such cases. Our first practice of medicine was in a small village. The only other physician in the village was a cooper by trade, and when he came to the surface as a full-fledged botanic doctor, his old neighbors still called him Josiah. He used the turnkey, and we a full set of extracting forceps. On a rainy, cold day two men came in with toothache. After they had been relieved some half dozen men, in the office, "to see the show," began to tell big stories of tooth extraction in their own experience. Uncle Charlie Campbell began to tell his experience, and of that I took notes: "You've had hard times," he began, "but I think mine was a little rougher than any of yourn. A cold wet morning like this, only wus, I galloped my big Gray Eagle horse down here, and Watt wasn't in. I dashed on down to Josiah, and he took seventeen rolling hitches on it, and he didn't move it. The last hitch straightened the canthook. I told him to mount my horse and ride like a whirlwind to the smith shop and have the canthook repaired and charged to me. While he was gone I improved the time by going to his barn and bringing in his halters, bridles and lines; as I came back from the barn, I spied his wife's clothes line, and got that, and besides, an ax and mattock. Then I sat down and chalkmarked the breadth of myself on the floor, and with the tools I took up a plank at each chalkmark. Then I sat down again and strapped myself to the floor, passing the cords under the joists and over my shoulders and around my legs and thighs. I had just got ready when he returned, and I told him to get down on his knees, and get his shoulder under the canthook and I thought we'd fetch it. It didn't start right off, and I took a pin out of my jacket and began to sock it into his hips, and I want you to believe the fifth sock fetched it. Josiah's an excellent tooth-puller."

"GOLD WELDING."

Dr. Thomas Fletcher says, in the *Items:* "The clean surfaces of pure gold will weld without the aid of heat, and if the welding property is destroyed by accidental moisture or impurities, it can be restored partially without the aid of heat by washing the surface with chloroform."

This is so well recognized in some parts of the profession that dentists would feel like replying, "of course." But nothing is *of course*, except the existence of God. All else must be proved. And till the above is universally recognized, it is well to have it repeated, now and then, by some one high in authority like Dr. F. We recollect when it was believed but by few. At the meeting of the American Dental Convention, in 1856, Prof. J. Taft alluded to the welding properties of gold; and the President, Prof. Chapin A. Harris, thought it his duty to leave the chair to correct the fundamental error, as he called it. He told us that there are but two welding metals, and these are iron and platina. A co-professor of Dr. Taft, who was a recognized teacher of chemistry and metallurgy, called attention to the fact that iron and platinum require a high heat to develop their welding properties, while gold welds at ordinary temperatures. This called out a co-professor of Pres't Harris, who said nearly these words: "Mr. Chairman—If it be true that gold can be welded at common temperatures, or, indeed, at *any* temperature, a new fact in the science of metallurgy has, now and here, been promulgated; but we have heard of young upstarts before." This remark was toned down in the report of the proceedings. And as the advocates of the welding fact did not wish to claim advanced age, the discussion was allowed to drop for the present. But the welding of gold did not stop. And even the upstart man started up and soon wrote a series of good articles on gold, and recognized its welding property as cordially as he had criticised its early advocates who were so offensively young. Ideas travel.

"DANGER HERE."

Such is the solemn warning at a R. R. crossing between here and Cincinnati. We wish to use the warning in another direction. No less distinguished authority than Dr. Patrick is represented as saying, when speaking of *pyorrhea alveolaris*, "I take an excavator and scrape away all the dead bone and other foreign substances, and then apply sulphuric acid, full strength, and find it a very successful remedy, rarely ever having a failure with it." It is fortunate that "sulphuric acid, full strength" is not an article of commerce, or sad mistakes might be made. This acid, full strength, is a solid, about as fit to go into the mouth as the end of an iron poker, heated to a white heat. This acid is seldom found even as strong as an equivalent of it dissolved in an equivalent of water, properly called sulphate of water, and even this is too severe an escharotic to be prudently used in such cases. "Dilute sulphuric acid" is officinal, and of the same strength as elixir vitriol. We suppose the "oil of vitriol," undiluted, is the application intended.

A SERIOUS PRINT ERROR.

Near the bottom of page 41 of our January number, in an editorial article is found the error to which notice is called. "A mild ointment of preiodide of mercury" is spoken of. There is no such medicine; but the danger is that *periodide* of mercury may be used, which would be entirely too active, if not dangerous. The *protiodide* is the salt to be used—sometimes called the mild iodide of mercury.

Our "copy" was once as legible as printed matter, but oh, the difference now! We don't feel surprised that mistakes are made, but we regard this one as important, hence our special notice of it.

What We See and Hear.

[We are always pleased to receive short, practical articles for this department, and invite any to send brief descriptions of such appliances, devices, methods, remedies, etc., as will be of interest to the profession.]

Glycerine and Carbolic Acid.—Glycerine will counteract the effects of carbolic acid on the mucous membrane of the mouth. It is much pleasanter than vinegar, and fully as potent. Take a pellet of absorbent cotton in the foil-pliers and dip in glycerine and apply, and the white spot disappears like magic.—*Int. Jour.*

To Change the Character of Vulcanized Rubber.—M. Morelette, a well known French scientist, states that vulcanized rubber dipped suddenly into boiling glycerine takes the character of non-vulcanized rubber, *i. e.*, that its parts can readily be joined, and that it dissolves in the usual solvents of caoutchouc. The glycerin must be boiling at the time of first contact.—*Advertiser.*

Hand-Piece Protector.—In the use of mandrels carrying abrading materials, especially when wet powders are employed, the gritty substances are apt to work along the shank and into the nose of the hand-piece, which thereby becomes worn out of true. To avoid this injury and also to keep out the saliva when using burs on lower teeth not inclosed by the rubber-dam, I slip over the bur or mandrel shank one of the small (No. 1) rubber cups used for polishing purposes, and find it to perfectly protect the hand-piece.—Dr. J. D. Ennis, in *Cosmos.*

Probes.—A very convenient, smooth-ended probe may be made from a worn-out Gates-Glidden drill. File off the end of the drill just at the beginning of the termination of the shank of the instrument, then grind it round and smooth of the proper size, and polish it. If the shank is spring-tempered, draw the temper, and it will be found quite as useful as a silver probe, with the added advantage of having a delicate handle, firm and large enough to be held easily by the hand. A probe should always be oiled or dipped in vaseline before being used.—*Ed. Dent. Rev.*

Liquid for Bronzing.—A fluid for bronzing paper, glass, leather, etc., is prepared as follows (*Pharm. Zeitung*): Diamond fuchsine 10 parts, and methyl-violet 5 parts, are dissolved with the aid of heat in 95 per cent. alcohol. To the solution 5 parts of benzoic acid is added, and the whole is boiled from five to ten minutes, until its green color has changed to a lustrous golden bronze. This is very brilliant, durable and adherent, is easily laid on with a brush, and dries in a few minutes.

Spray the Mouth.—Regulating appliances, at times, are held *in situ* for two or more weeks and in spite of the efforts of cleanliness, on the part of the wearer, bad odors may be emitted when the patient breathes through his mouth. After the mouth has been syringed with water, an ordinary spray apparatus with a long hard rubber tube, should be charged with cinnamon water, boracic water, silico-Fluoride water or other useful disinfectant and the mouth thoroughly sprayed. Let the patient do this at home if it is inconvenient to see him frequently. Sanitary measures of this sort are generally appreciated.—*Ed. Dental Review.*

To Keep Cavities Dry.—Not infrequently does it occur in practice that cavities in the lower teeth are to be examined or treated expeditiously when the application of the rubber-dam would consume more than the available time. Yet it is very desirable that in such cases the cavities should be made quite dry, and kept so long enough to allow either thorough examination, preliminary excavation, temporary filling, applications for devitalization to be tightly sealed in, or the introduction of medicaments into pulpless canals. For these and similar purposes the expedient of pinning pieces of spunk, bibulous paper, or the folded end of a napkin against the sides of the teeth by means of a rubber-dam clamp, will be found to be both effective and timesaving.—W. S. H., in *Cosmos.*

Tooth Extraction in Foreign Lands.—The English, the French and the German extract more teeth than does the American, who are taught to save such as are ruthlessly sacrificed by the average European dentist. No one at an American meeting ever saw such dental butchery as was exhibited at the Berlin Congress, and I doubt if an American representative society would witness such extraction of teeth which might be saved as was seen at Exeter, though the latter in repulsiveness was as nothing in comparison with the former. Some way, Americans consider it rather *infra dig.* to be caught pulling teeth. It looks too much like amputation—a confession of failure. We extract, of course, but we don't make an exhibition of it. In Europe it is considered as a rather high grade of dental surgery, and receives corresponding attention.—Dr. W. C. Barrett, *cor. Dent. Review.*

To Control Occlusion.—The difficulty in this operation is to obtain a natural articulation. Our text-books give us no end of rules: "Drop the patient's head as far back as possible"; "Tell him to swallow"; "Tell him to touch his back teeth"; "Don't tell him to bite back, or he will surely bite forward," etc.

My plan is as follows: For instance, in a full upper case I place the trial-plate and wax rim in the mouth ready for the imprint of the inferior teeth, then I simply place the tip of my forefinger at the front of the wax rim about where the lower teeth will touch, and ask the patient to close his mouth slowly. When the inferior teeth touch my finger I make the request, "Don't bite my finger, but bite back of it." At once, if he has bitten forward, the jaw jumps back like a machine. As the teeth approach the wax I gradually manipulate out my finger. I have tried this plan in over thirty cases with entire success.—Dr. Harold Clark, Toronto, *Cosmos.*

To Produce Absorption of Gums.—In cases of excessive proximate decay, when this has extended below the gum margin I have produced an absortion of the gum, prior to the application of the rubber-dam, as follows: I wrap a piece of dental floss or gilling twine twice or more around the tooth, forcing this well up on the neck of the tooth, and filling the remainder of the cavity with red base plate gutta-percha, forcing this likewise well against the ligature. This will often be but an initiatory step. At the next presentation I can see the condition of affairs better, when I either repeat the procedure with the ligature as described, or force the gutta-percha between the teeth, crowding it well against the gum margin at the neck of the tooth. When there is *a little tongue* of gum extending into such cavities, I do not attempt its absorption, but I dissect it away with a sharp pointed abscess lance and when the bleeding has subsided, proceed as above.—Dr. T. F. Chupein, *Mirror.*

Temporary Fillings.—The teeth of women during gestation and lactation frequently require filling. Shall we use gutta-percha or oxyphosphate? For a number of years we have given a fair trial to each of the substances mentioned and have in consequence come to the following conclusions: In all proximal cavities reaching the cutting or grinding edges of teeth, we now use oxyphosphate of zinc. In labial or buccal cavities we find gutta-percha most serviceable. In those proximal cavities of molars or bicuspids midway between the gums and the cutting edge, we use gutta-percha if the cavity be deep—if shallow use oxyphosphate. To fill the teeth at such times, with gold or other metals (unless plastic) is a waste of time and such operations are of doubtful value. Fillings of a temporary nature are often required for children and the same general rule may be observed in such cases with markedly beneficial results. All oxyphosphate fillings should be varnished, after hardening, and the varnish should be dried likewise.—*Ed. Dental Review.*

Copper Pulp-Caps.—Dr. A. J. Parker says, that in his search for a pulp-capping that should possess the qualities of a non-conductor, an unyielding protector, and that should cause no irritation, he had adopted a concave cap of copper, varying in size to meet the indications. Such a cap, if properly adjusted, came nearest to his ideal of what a pulp-cap should be than anything else he had ever used. The method he employed is as follows: After thoroughly cleansing the cavity he wiped it out with eucalyptol and cotton to disinfect, and then with oil of cloves to soothe the pulp. Then, selecting a cap of proper size, he dips it into a thick solution of sandarac, which makes it adhere to the place where it is applied. He then mixes a paste of oxide of zinc and oil of cloves, which he works down around the edges and over the cap, which makes it non-conducting. He makes the caps by rolling down a strip of copper or copper wire to the thickness of thick writing-paper, and with a hollow punch, the copper strip being laid on a block of lead, strikes up the cap, which takes the cancave shape of the punch. He had been using this method for about a year, and the results had been entirely satisfactory. —*Cosmos.*

A METHOD OF SAVING WEAK WALLS OF BICUSPIDS WHICH HAVE BEEN USUALLY SACRIFICED FOR CROWNS.—Miss B. had a right superior first bicuspid with nothing of the crown remaining except a frail outer wall with cusp and an inner wall barely high enough to support a matrix.

I filled the root canals, leaving the principal part of the pulp chamber to serve as a point of anchorage for the amalgam. Then I cut off the cusp below the line of possible occlusion with the lower teeth, beveling the stump outward. Over the end of the stump and to the cavity wall a piece of thin platinum was burnished. Removing this carefully, I flowed gold upon the upper surface to form a cusp, applied again and reburnished to the cavity and edges—solder was then flowed over the face of the platinum to make it rigid, it was then carried to position with thin cement and held firmly till set. A copper band matrix, previously made to fit the tooth, was now applied and filled with amalgam, rather dry, and condensed with the mallet. The matrix was left in position 3 days, it was then removed and the filling and cusp finished with stones, strips and disks.

Result—A natural wall preserved at point of ordinary observation, a gold cusp scarcely noticeable, the form of which supports the wall against fracture; inwardly solid amalgam, except a short piece of the natural wall. The whole promises well for usefulness, perhaps for many years.—DR. G. NEWKIRK, *Review.*

A NEW MATERIAL FOR ROOT FILLINGS.—DR. ALLAN says: I take nitro-cellulose, which is the base from which celluloid is made and is negative in all its reactions, and is not a material that would be acted on by any of the fluids of the mouth, or any fluid that would be found in the dulp-canals, and I dissolve it in two parts of ether to one of alcohol. It is admissible in all proportions. I dissolve enough nitro-cellulose in the mixture to form a thick paste, and having obtained this mixture and gotten my tooth ready for filling, the rubber-dam applied, and the root thoroughly dried out and cleansed, I first wipe it out with a mixture of two parts of ether to one of alcohol. I then take a small pledget of surgical cotton that has been soaked in a solution of one part to a thousand of bichloride of mercury, and dip it in that solution, carefully wiping off any surplus, and this cotton, wrapped around a fine broach, can be passed up into the finest canal. It readily adapts itself to the walls of the canal, and, so far as I know, makes a perfect root filling. On top of this I place ordinary gutta-percha, which, I think, takes up any little excess of the solution that the nitro-cellulose is dissolved in. I do not see any objections to this method of practice. If there are any, I would like to have them pointed out. It certainly seems to be satisfactory, and places in the root-canal an absolutely negative material, one that germs of any kind cannot act upon, and which adapts itself perfectly to the walls of the canal, and fills all the requirements of such a filling better than anything I have heretofore adopted.—*N. Y. Odont. So. report, Int.*

Filling Molar and Bicuspid Pulp Canals.—D. S., Three Rivers, Mich., writes: "I find in a large number of cases great difficulty in filling root canals of molars and bicuspids on account of their small size, and indeed have many times been unable to fill them satisfactorily to myself."

As a rule there are not many canals that cannot be filled, if the operator is persevering and the patient can pay for his time. Make the openings as direct as possible over the canals, that the instruments may enter without curving, then if they do not penetrate very far use a Gates-Glidden drill (smallest size), either on the engine right-angle or by hand as circumstances indicate, until you pass the constricted part, which will usually be found near the opening of the canal and can be enlarged by gradually increasing the size of the drill. Beyond this point the canal will be found large enough to admit of filling. Each operator has probably a method of his own with which he is fairly successful. We use the Donaldson probes and cleansers, peroxide of hydrogen, hot wire drier, and, as we invariably fill with chloro-percha, the essential oils (cajeput, cloves, wood-creosote, eucalyptol, etc.) should be used for dressings, because solvents of the gutta-percha. Dr. L. E. Custer suggests that canals be dressed with the medicine best suited to the filling—if you intend to fill with the oxychloride of zinc use the chloride of zinc solution, etc., etc. After filling with chloro-percha we follow it with a gold or copper point previously fitted to the canal; in large canals we prefer to use gutta-percha or lead points. Lastly, always use the rubber-dam where possible, don't be in a hurry and don't fill it to-day if you are not sure you have reached bottom.—W. H. S.

A TEST FOR ROCKING FILLINGS.—Fillings may rock so little as to be imperceptible to the naked eye, yet be sufficient to cause leakage and consequent undermining and disintegration around weak walls. In fact, I think I would be safe in saying that at least one-third of the cohesive gold fillings in cavities with two walls broken away, that must be restored by building out, rock more or less, especially if an undue amount of malleting has been exercised in the process of condensation. This may seem at first thought an extravagant assertion, but if those who doubt the statement will take the trouble to test fillings in their practice, they will find that I am not far wrong.

A good test for rocking, after a filling is well under way, is to take a strip of gold, say an inch in length, and tacking one end on near the center of the filling, allow the strip to stand off at right angles to the tooth. Then by placing the point of the plugger first one side then on the other and tapping with the mallet, if there be any rocking at all the outer end of the strip will be perceived to move from side to side through space, as the filling is alternately tapped. An amount of tipping which would be imperceptible under a strong glass would manifest itself by this test, and after trying it awhile one would be surprised at the small number of cohesive fillings in daily practice that do not show just the least amount of rocking. This difficulty of inserting well-condensed, non-rocking, cohesive gold fillings will, I think, explain to a certain extent why soft fillings nave been known to stand the test of time along by the side of beautifully-polished cohesive fillings that have failed in a very few years. Fillings often fail from over-malleting. While it is essential to get a pretty thorough condensation to insure anything like a perfect cohesion between the molecules of the metal, the fact must not be lost sight of that the tooth is a calcific body that can be pounded into powder, if the process be continued long enough, even though a layer of soft metal be interposed between it and the point of the hard steel instrument used in condensing. In this, as in many other things, mechanical judgment, attention to small details, reason and thought are very essential to a great degree of success.—*Ed. Sou. D. Jour.*

Societies.

"Wherewith one may edify another."

MEETINGS.

Alabama Dental Association meets annually. Next meeting at Anniston, on the second Tuesday of April, 1891.

Illinois State Dental Society meets at Bloomington, second Tuesday in May, 1891.

Iowa State Dental Society meets annually. Next meeting in Sioux City, on the first Tuesday in May, 1891.

Southern Minnesota Dental Society. Next meeting in Mankato, third Tuesday in April, 1891.

Vermont State Dental Society meets annually. Next meeting at Rutland, March, 18, 1891.

NORTHERN OHIO DENTAL ASSOCIATION.

The forty-second annual meeting of this body will be held at Oberlin, O., in the Y. M. C. A. Building, Tuesday, May 12th, 1891, at 10 o'clock, A. M., continuing three days. A very interesting program has been prepared, embracing the following subjects, viz:

"Development of the Teeth," paper by Dr. W. H. Whistlar, of Youngstown, discussion opened by Dr. A. J. Dowds, of Canton; second, "The Recurrence of Decay in Teeth," paper by Dr. J. G. Templeton, of Pittsburg, Pa.; third, paper by Dr. W. H. Atkinson, New York, subject, "Hind Sight," discussion opened by Drs. C. R. Butler, Cleveland, and E. J. Waye, Sandusky; fourth, "Sanitary Condition of the Mouth, and How Best to Maintain It," paper by Dr. J. F. Dougherty, of Canton, discussion opened by Dr. W. T. Jackman, of Cleveland, and Dr. J. H. Wible, of Canton; there will also be presented a number of voluntary papers, incidents of office practice, and several clinics, among which are the following: "A Tin Filling with Gold Facing," by Dr. S. B. Dewey, Cleveland; second, "Electricity Supplemented with a paper," by Dr. Frank Creger, Fremont, O.; third, "Melting an Ingot of Amalgam," followed by a talk on the same, by Dr. J. F. Siddall, Oberlin, O.

This promises to be an unusually interesting meeting and we hope that all the dentists who can will make arrangements to attend and carry with them any new appliances, devices, models of interesting cases, or report of some case in practice.

Any desired information may be had by addressing Dr. Henry Barnes, 106 Euclid Ave., Cleveland, O.

MISSISSIPPI VALLEY DENTAL ASSOCIATION.

The forty-seventh annual meeting of the M. V. D. A. will be held in Cincinnati on the 10th, 11th and 12th of March, 1891.

The following papers are listed with others to hear from:

President's Address, Dr. M. H. Fletcher, Cincinnati.

Dentistry thirty years ago and now, Dr. J. W. Jay, Richmond.

Recent advance in Dental Mechanism and Art, Dr. C. S. Smith, Chicago.

The proper Sphere of the Dentist, Dr. H. H. Harrison, Wheeling.

Surgery of Cleft palate, Dr. B. M. Rickets, Cincinnati.

Scientific investigation of the Jaws and Cranium, Dr. Eugene S. Talbot, Chicago.

Why Copper Amalgam sometimes Washes in the Mouth, Dr. W. B. Ames, Chicago.

Continuous Gum Clinic, Dr. G. R. Riddell, Chicago.

The Executive Committee are working the new plan adopted at the last meeting and a very interesting meeting may be looked for. For other particulars see March No. of the Journal.

KANSAS STATE DENTAL ASSOCIATION.

The twentieth annual meeting of the Kansas State Dental Association will be held at Wichita, Tuesday, April 28th, 1891, continuing four days. As many as can meet with us will be cordially welcomed.

E. C. Esterly, *Sec'y.*

Books and Pamphlets.

THE MICRO-ORGANISMS OF THE HUMAN MOUTH. THE LOCAL AND GENERAL DISEASES WHICH ARE CAUSED BY THEM. By W. D. MILLER, D.D.S., M.D., Prof. at the University of Berlin; with 128 illustrations, one chromo-lithographic and two photo-micrographic plates. Philadelphia: The S. S. White Dental Mfg. Co., Publishers. 1890. Price, cloth, $5.00.

Every practitioner knows how faithfully Dr. Miller has worked in this line of experimentation and how much of the unseen he has brought to light. There is but one W. D. Miller and this work is virtually a part of himself. It contains 365 pages of well written and illustrated text. The author in his preface says: "It has been my endeavor in the following pages to bring about a better understanding of the nature and extent of bacteritic growths in the human mouth, of the disastrous effects which they are capable of producing, and accordingly, a more proper appreciation of the importance of dental surgery and dental hygiene as a branch of general medicine.

The contents of the book consist chiefly of original investigations which, in part, have appeared in different American, English and German journals and in part appear here for the first time.

The first three chapters are designed more particularly for those of my readers who may not have occupied themselves with bacteriological studies, it being, in my opinion, utterly impossible for any one to obtain a proper understanding of the action of micro-organisms in the mouth without a knowledge of at least the elementary principles lying at the foundation of the science of bacteriology."

Chapter IV treats of the Biological Studies on the Bacteria of the Mouth. Chapter V, Mouth-Bacteria as Exciters of Fermentation. Chapter VI, Action of the Products of Fermentation on the Different Structures of the Mouth. Chapter VII, Original Investigation on the Decay of the Teeth. Chapter VIII, Etiology of Dental Decay. Chapter IX, Prophylaxis of Dental Decay.

Part II.—The Pathogenic Mouth-Bacteria, and the Diseases which they produce. Chapter X, The Buccal Secretions as Carriers of Toxic Substances and of Parasitic Excitants of Diseases. Chapter XI, Entrance-Portals of the Pathogenic Mouth Bacteria. Chapter XII, Supplementary remarks on Bud, Mould, and Animal Fungi.

Bacteriology is a subject every dentist should at least be informed upon, and with such a work as this at hand there is certainly no excuse for ignorance. We can heartily recommend it to the profession.

THE PACIFIC DENTAL JOURNAL, Vol. I, No. 1, has just reached us. It is edited by Dr. W. E. Burkhart, and published by The Tacoma Dental Depot, Tacoma, Washington. It contains 24 pages of reading matter, will be published quarterly and costs $1.00 per year. We welome the new visitor and wish it a successful career.

Illinois State Dental Society Transactions. Twenty-sixth annual meeting held May 13th to 16th, 1890. The publication committee have had plenty of time in which to make the Transactions presentable, and they have done their part well. The Illinois State Society is made up progressive dentists and the papers and discussions are always interesting. Dr. Patrick's paper on the "Second Period in the History of Dentistry," including a list of 396 books treating on the teeth, published during the period 1532 to 1841 is a valuable addition to our dental literature.

The Items of Interest appears in a new dress and we congratulate the publishers on the improved appearance of the title page. In fact the appearance is all improved, with one exception: some *deserved credits* are still out of sight, and either our eyesight must have rapidly failed or other credits have grown small exceedingly fast. If they continue to thus decrease, we suggest that the publishers furnish a microscope to each subscriber that the wary reader may definitely determine whether it be a credit mark or a microbe.

Announcement.—E. B. Treat, Pub., N. Y., has in press for eariy publication the Ninth Yearly issue of the "International Medical Annual." Its corps of thirty-seven Editors—specialists in their respective departments, comprising the brightest and best American, English and French authors—will vie with previous issues in making it even more popular and of more practical value to the Medical Profession.

We have the assurance of some of the best medical practitioners that the service rendered their profession by this Annual cannot be duplicated by any current annual or magazine, and that it is an absolute necessity to every physician who would keep abreast with the continuous progress of practical medical knowledge.

Its Index of New Remedies and Dictionary of New Treatment, epitomized in one ready reference volume at the low price of $2.75, make it a desirable investment for the busy practitioner, student and chemist.

In Press.—Diabetes, Lectures on, by Robert Saundby, M.D., Edinburgh. 300 8vo pages, $2.75.

In Press.—Sexual Neurasthenia, by G. M. Beard, M.D., and A. D. Rockwell, M.D. Third Edition, Enlarged, $2.75.

The Medical Bulletin Visiting List for 1891. Published by F. A. Davis, Philadelphia. Price $1.25, $1.50, $1.75.

Besides the useful information in regard to doses, weights, tables, calculations, etc., this book contains blank space for special memoranda (ruled for name, page in ledger, each day of week and Dr. and Cr. columns), general memoranda, Addresses of Patients, Obstetric record, Nurses addresses, Record of Deaths, Vaccinations, Bills and Accounts, Cash Account, etc., fully meeting the requirements of such a work.

The Physician's All-Requisite Account-Book. Philadelphia: F. A. Davis, Publisher.

This book was designed by Wm. A. Seibert, M.D., with a view to making it a time and labor-saving account book and ledger. It will meet all the requirements of the law and courts. Is self-explanatory; no cipher code. Its completeness without sacrificing anything. No posting; one entry only. Universal; can be commenced at any time of year, and can be continued indefinitely until every account is filled. Absolutely no waste of space. One person must needs be sick every day of the year to fill his account, or might be ten years about it and require no more than the space for one account in this ledger. Double the number and many times more than the number of accounts in any similar book; the 300-page book contains space for 900 accounts for 12 months, and the 600 page book contains space for 1800 accounts for 12 months. There are no smaller spaces.

All physicians desiring a quick, accurate, and comprehensive method of keeping their accounts, will find this work just what they are looking for. Price $5.00 and $8.00, net.

Vick's Floral Guide.—No lover of a fine plant or garden can afford to be without a copy. It is an elegant book of over 100 pages 8¼ x 10½ inches, beautiful colored illustrations of Sunrise Amaranthus, Hydrangea and Potatoes. Instructions for planting, cultivating, etc. Full list of everything that can be desired in the way of Vegetable and Flower Seeds, Plants, Pulbs, etc. Also full particulars regarding the cash prizes of $1,000 and $200. The novelties have been tested and found worthy of cultivation. We hope it will be our good luck to see the Nellie Lewis Carnation and taste the Grand Rapids Lettuce. It costs nothing because the 10 cents you send for it can be deducted from the first order forwarded. We advise our friends to secure a copy of James Vick, Seedsman, Rochester, N. Y.

The Don't Forget It Calendar for 1891, sent by E. B. Treat, Publisher, New York, is a novel and useful one. Space is given under each date so that it answers for a daily record and blotter. Price 20 cents.

Standard Dictionary of the English Language.—Funk & Wagnall, New York, are preparing a model dictionary. No expense is being spared to have it complete and accurate. It will contain fully 50,000 more words than any other unabridged dictionary, and among its special features are:

1. The locating of the verifying quotations (giving author's name also book and page.)
2. The use of the scientific alphabet adopted by the American Philological Association in the pronunciation of words.
3. Placing the etymology after the definition.
4. Placing the most important current definition first.
5. In case of disputed pronunciation giving also that of other dictionaries.
6. The indication by upper and lower case initial letters as to whether words in the vocabulary are to be written as proper or common names.

It is certainly a herculean task, but when completed, the work without doubt will meet with universal favor.

Our Aftermath.

THE MORE KNOWLEDGE a man has, the better he'll do 's work.—*Adam Bede.*

THE ARCHIVES OF DENTISTRY, published at St. Louis, Mo., has suspended publication.

DIED.—KISER—At his home in Fostoria, O., January 19th, 1891, Dr. S. A. Kiser, aged 31 years.

"DR. H. H. JOHNSON, 306 Second Street, Macon, Ga., Editor *Southern Dental Journal*," is the way the card reads, and we infer therefrom that the editor has removed from Atlanta.

DR. N. S. HOFF, of the Dental Department of Michigan University, visited his "old stamping ground," Cincinnati, during the holidays, "dreaming dreams and seeing visions."

A MASTODON MOLAR TOOTH, weighing between seven and eight pounds, was found at a depth of fifteen feet at Manson, Iowa, recently, by workmen engaged in digging a ditch. With it were some of the bones of the mammoth.

"WHAT THE DENTISTS ARE SAYING" is the title of a series of unsigned articles in the N. Y. Sunday *Herald.* They are designed to instruct the public on the present methods of practice, and are calling forth a great deal of discussion from the profession.

WHY do some copper-amalgams squeak? The sound is like the "cry of tin," and patients sometimes call them their "musical teeth." Is it because the copper contained too much mercury; because the filling was not thoroughly condensed; or the amalgam was not heated sufficiently to thoroughly break up the crystallization?

NEW YEAR GREETINGS.—The custom of sending cards to friends and patrons on the first day of the year is not as general in our country as it should be. Of those received thus far, the handsomest and neatest is from Drs. William and Louis J. Mitchell, London, with "Best wishes for the new year." Here's the same to you, Doctors, and may the custom grow.

Recreations of the Illinois Dentists.—A few days ago Dr. Glenn, a dentist, working for Geo. T. Gray, was a principal in a boxing match and got worsted. The *Daily Commercial*, a paper published by a rival dentist, attacked him in an article and published a cartoon. This evening Glenn met Dr. Kelly, the editor of the *Commercial*, and a fight ensued. Revolvers were drawn and much excitement was caused. Friends of both parties are endeavoring to hush the matter up.—*Peoria dispatch, Dec.* 27, 1890.

"**Fill Your Own** TEETH with *Crystaline.* Stop Pain and Decay. Lasts a lifetime. Circulars free."

"ENAMELITE for filling your own teeth; sample 25c. by mail."

The above advertisements may be new to some of our readers. They are from the *Ladies' Home Journal* and the N. Y. *Tribune*, respectively, both papers with large circulations. The "Enamelite" sent for 25c. is phosphate of zinc powder and liquid contained in two quarter-dram vials with directions for mixing, etc. Of course such fillings, in the language of advertiser, "last a lifetime."—W. H. S.

"It is singular how many people still think that the free use of italics are necessary in order to perspicuity of style. A recently published and popular book is sadly marred for a multitude of readers by the excessive and entirely needless use of this method of indicating emphasis. An occasional italic word doubtless serves a good purpose, though it is possible to get along without italics and suffer no loss or harm, but when they are sprinkled about on every page they seriously distract the eye and become neither more nor less than a nuisance."—*N. Y. Tribune.*

New Dental College to be organized in connection with the Cincinnati Medical College.—Cincinnati is to have a new Dental College, which is to be controlled by the dentists of the city, and is to be known as the Dental Department of the Cincinnati College of Medicine and Surgery. To the present charter of the college an amendment will be added, and the new department will be authorized to grant the degree of D. D. S. Dr. Junkerman, fermerly of the Ohio Dental College, is the originator of the new school. The Board of Trustees of the Cincinnati College passed a resolution last December to admit the new department and also to add two trustees to their Board to represent it. The first lecture, it is understood, will be delivered about the middle of next September. An infirmary will be a feature of the new school, and the poor will be treated free of charge. A dental laboratory will also be added with all the modern facilities for making teeth.

The Faculty will be as follows: G. S. Junkerman, M.D., D.D.S., Dean of the Faculty, Professor of Special Anatomy and Operative Dentistry; John M. Shaller, M.D., Professor of Physiology and Practical Histology; W. E. Lewis, M.D., Professor of Descriptive and Practical Anatomy; A. I. F. Buxbaum, M.D., D.D.S., Professor of Orthodontia and Clinical Dentistry; W. T. McLean, M.D., D.D.S., Professor of Prosthetic Dentistry and Dental Metallurgy; Charles H. Martin, D.D.S., Professor of Dental Materia Medica and Dental Pathology; Wm. Dickore, Ph.D., Professor of Theoretical and Analytical Chemistry.

ALUMINUM OR ALUMINIUM AGAIN.—*To the Editor of the N. Y. Tribune—Sir:* The letter of F. S. D. in your issue of to-day refers to the proper spelling of the metal aluminium. Three years ago a committee on spelling and pronunciation of chemical names was appointed by the chemical section of the American Association for the Advancement of Science. After much correspondence and labor the committee published a report, to be found in the proceedings of the association for 1889.

Aluminium received special attention, a vote of the chemists being taken on their preference, with the result that a majority favored the omission of the i in the penultimate syllable.

The question is one of education, habit and taste; most manufacturers and dealers in chemicals use aluminum, while many teachers and investigators prefer aluminium.

F. S. D. tries to establish an analogy with words ending in ium, but platinum, lanthanum, glucinum, molybdenum and tantalum may be cited in opposition to his views.

Though I am a member of the committee above named which recommends aluminum, I do not myself adopt the recommendation, preferring to retain the i for euphony. H. CARRINGTON BOLTON.

University Club, New York, Nov. 25, 1890.

From The Engineering News:

We are pleased to note that that admirable electrical journal, *The Electrical Engineer*, has joined the great majority of American technical journals and technical men in styling the latest addition to the list of cheap and useful metals aluminum, and not aluminium, which latter designation it had previously been using, and which latter is still, we regret to say, the more common form in England. That a change will come soon there also we cannot doubt. Reason, analogy, euphony, the history of the metal, the practice of all the large manufacturers, the genius of the language, which strongly leans toward the shortest form for all words in common use, all favor the shorter term. Unfortunately, chemists, naturalists and such like folk have rather a leaning the other way, toward using the long form of any name when there is a choice, as seeming the more scientific and abstruse. While the metal was a mere chemist's curiosity, they had their way unchecked, and so managed to interpolate another syllable into a word, used only by themselves. Now that it is coming into common use, it is becoming already clear that this unwarranted interpolation will not "stay put."

["You pay your money and take your choice." All the great dictionaries give the preference to *ium*. Murray's Historical Dictionary gives a quotation from Sir H. Davy, 1812, as its discoverer, and he called it *aluminum*. The same year a writer in the *Quarterly Review* changed its final syllable to *ium*, "because," he says, "it sounds more classical"! All other authorities seem to ignore Sir H. Davy and give the credit of its discovery to Wöhler, 1827 or 1828.—W. H. S.]

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Contributions.

"A word fitly spoken is like apples of gold."—SOLOMON.

NOTES ON METHODS OF INTRODUCING GOLD FILLINGS.

BY JAMES F. COLYER, L.R.C.P., M.R.C.S., L.D.S., LONDON, ENGLAND.

Continued from page 67.

II. NON-COHESIVE METHOD.

FOR this method, as with cohesive, the gold is prepared either in sheets or as cylinders. The sheet is usually introduced in one of three forms, *i. e.*, (1) Tape or Ribbon; (2) Rope; or (3) Stars or Strips.

Whichever method, however, is selected, one golden rule holds true, that the folds of sheets or cylinders must be placed parallel to the walls of the cavity.

(*a*) *Sheet.*

(1) *Tape Method.*—In using the tape method, cut perhaps, a sheet of No. 4 foil in three pieces, and fold each of these with the foil knife until their breadth is about equal to that of the cavity. Next, take the strip up by the conveying forceps in the left hand and convey it to the cavity, and with a suitable instru-

ment in the right hand press it down into folds parallel with the walls, each fold being left projecting slightly above the orifice of the cavity. When a few folds are arranged, they should be firmly compressed against the side of the cavity—useful instruments for this being shown in Fig. 37.

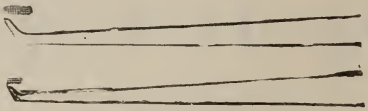

FIG. 37—Longitudinal Serrations only.

While for making the folds, those shown in Fig. 38 will be found best.

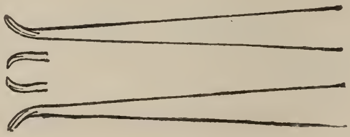

FIG. 38—Bing's Nos. 11 and 12.

When one length of tape is exhausted, another is introduced, and so on until the cavity is as full as possible.

The filling is then thoroughly condensed by suitable instruments—that shown in Fig. 39 being used for upper teeth, and that in Fig. 40 for lower teeth.

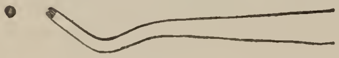

FIG. 39.

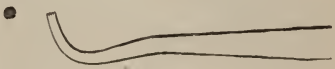

FIG. 40.

This step completed the surface should be tested by endeavoring to force into the gold an instrument of wedge shape, Fig. 41.

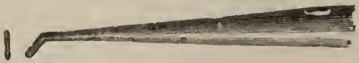

FIG. 41

This instrument is practically "riggled in," by moving in a lateral direction; the hole made is then filled up with tape or very small cylinders. This process (viz., forcing in the wedge-shaped instrument), is continued until it requires some considerave force to introduce the plugger into any part of the filling.

The surface of the plug is now thoroughly burnished with either a hand or engine burnisher (Fig. 42). This latter instrument is extremely useful, and trimmed down in exactly the same manner as recommended under cohesive, with the exception that after the use of the pumice, the burnisher is applied to the surface, and especially the edges.

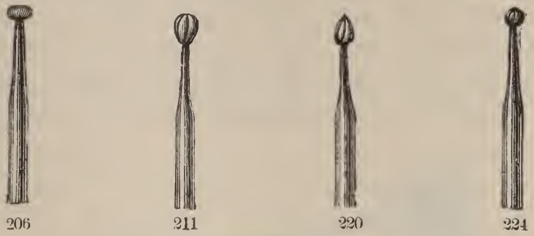

Fig. 42—Engine Burnishers (smooth or corrugated.)

(2) *Rope Method.* In this method the sheet, instead of being folded in strips, is rolled into a form resembling rope. There is practically no difference in the way of introducing it to that just described.

(3) *Stars or Strips.* In this process the sheet is folded into broad strips of about a half to three-quarters of an inch in breadth, and then cut at right angles into narrow strips.

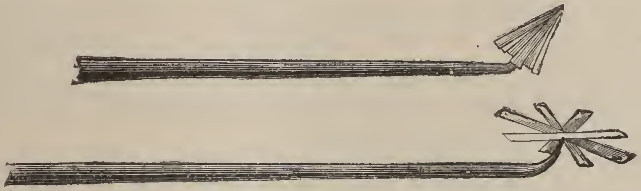

Fig. 43.

These are then arranged as shown in Fig. 43, and inserted with the central portion downwards into the cavity. The projecting ends being folded downwards and inwards, and compressed. Fresh portions are added in like manner until the cavity is full, the plug being finished in the usual way.

This process is useful for small deep cavities, and also for introducing the finishing portions into larger fillings.

(*b*) *Cylinders.*

Cylinders are, however, the most convenient form for introducing non-cohesive gold, and one of the most serviceable are those known as Ash's Non-cohesive, Style C.

This form of non-cohesive is introduced as follows:—

Take three, four, or more (the number depending upon the breadth of the cavity) between the blades of the conveying forceps, and compressing them laterally, place them in position towards the posterior part of the cavity holding them in place with an instrument in the left hand, condense them first on one side then on the other, and finally in the centre. In this way continue to introduce and condense fresh rows of cylinders until the cavity is a little over two-thirds full (Fig. 46). A different mode must now be adopted, the cylinders should be placed round the side of that part of the cavity which is still unfilled and condensed by wedging from the centre (Fig. 47), the last portion of the filling being introduced in the form of tape. The surface is now condensed, and the plug treated in exactly the same way as described under the tape method.

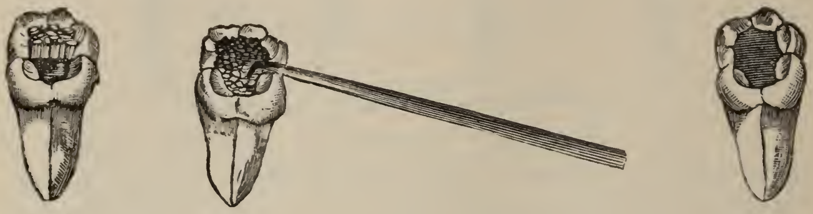

FIG. 46. FIG. 47. FIG. 48.

Representing various stages in filling.

Very often it will be found difficult to get the row of cylinders first introduced steady when condensing, if, however, they are simply placed in position, and a second or even third row added before commencing condensing, the difficulty will be overcome.

Non-cohesive gold can be most advantageously employed in crown cavities, and on the cervical edge of interstitial ones in combination with cohesive. The advantages claimed for non-cohesive gold are that it adapts itself better to the walls of the cavity than cohesive, and also that it is quicker to work, a point of great importance in practice.

III. COMBINATION OF COHESIVE AND NON-COHESIVE METHODS.

The combination of cohesive and non-cohesive, is a very favorite plan with many operators. Cavities in approximal surfaces of bicuspids and molars, are those usually filled by this method. The mode of procedure being as follows:—

Take two or three non-cohesive cylinders according to the breadth of the cavity, and place them along the cervical floor, so that the ends project outwards, not downwards. Gently condense these with the idea of getting them steady, and add another row, condensing again, first on one side, then on the other, and finally in the middle, since by these means you are not so liable to make the gold tilt.

This proceeding is continued until the cavity is about half full, Fig. 49, when the cohesive gold is started by wedging up a large uncondensed cohesive cylinder, Fig. 50, and to this latter tape is attached, and thə filling completed as described under the cohesive method, the plug being finished in the usual way.

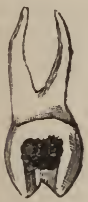

Fig. 49—shows non-cohesive cylinders in position, Stage 1.

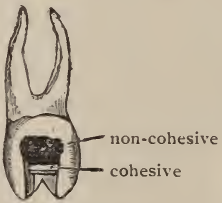

Fig. 50—shows cohesive cylinder wedged into position.

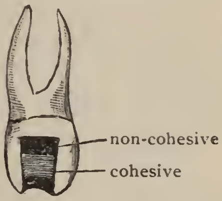

Fig. 51—shows cavity completed.

The advantage claimed by advocates of this method is that a better joint at the cervical edge is obtained than with cohesive, whilst those who oppose this method maintain that the non-cohesive gold is forced out by the power of mastication and forms a ledge for the lodgment of food, etc., at the cervical edge.

When the combination method is used for filling molars the floor, walls of the cavity and edges, are filled with non-cohesive the centre of the plug being completed with cohesive.

The idea being that non-cohesive adapts itself better to the walls of the cavity than cohesive, while on the other hand, the latter allows the filling to withstand mastication better than non-cohesive.

IV. GOLD IN COMBINATION WITH OTHER METALS.

Gold and Tin.—This method has many ardent advocates who claim that it is comparatively easy to make water tight fillings with this combination, and still more that it has a preservative action on the tooth substance. The great disadvantage is that it turns black, and on front teeth is naturally unsightly.

There are two principal ways in which we can use it, viz. ;

(1) Exactly the same way as when using a combination of cohesive and non-cohesive (the tin taking the place of the latter).

(2) By intermixing it with the gold as follows: One sheet of tin being placed between two of non-cohesive and the whole, folded up with either tape or rope. The material being introduced into the cavity as recommended under the non-cohesive methods. A peculiarity of this latter method is not only that it works extremely softly, but that after a time some chemical action seems to take place so that the surface becomes quite hard and gritty.

The colors of the filling is, however, by no means of a pleasing character.

Gold and Amalgam.—This combination is extremely useful in those cases where the cervical edge is below the gum, as for instance in the buccal cavities of molars, and interstitials where the cervical edge is high up and difficult to get at.

The combination is used in two ways:—

(1) By filling on the first visit the part of the cavity where the amalgam is to be used in the ordinary way, putting some soft G. P. or cotton wool and mastic into the remaining part, and on the second visit trimming down the amalgam, and filling the remaining portion with gold.

(2) By filling the part required with amalgam, taking off as far as possible all excess of mercury, and then starting the gold direct on the top of the soft amalgam, the first two or three pieces apparently disappear, but the gold soon takes up the residual mercury, and resumes its normal color, when this is the case the filling is completed exactly like a simple cohesive gold filling.

Some agree that electrical action is set up by the combination of gold and amalgam, but it is in all probability more theory than practice, the first method is a favorite one of mine, and I have never yet found a patient complain of any such kind of action.

Gold and Platina.—In this method the leaves of platina are gilded and made adhesive, and then worked in parallel layers. Great care is required to thoroughly anneal the strips and also preserve the parallelism, since if this is not done when the filling is completed patches of gold will show on the surface.

The diagrams with which I have endeavored to illustrate parts of the text have been drawn for me by Mr. Phillips and to him I must express my gratitude for his skill and kindness.

SOME PRACTICAL POINTS INVOLVED IN THE RELATION OF THE UPPER TO THE LOWER TEETH.*

BY LEONARD MATHESON, L.D.S.

The brief paper that I have the honor to read to-night must appear to you to be of a very heterogeneous character, when I say that it touches upon subjects apparently so disconnected in interest as contour fillings, regulating frames, all-gold crowns, and the habitual extraction of the sixth year molar: and I feel that a word of explanation is due as to my reason for dealing in one paper with such various topics. My intention, then, is not to offer any elaborate presentation of the mathematical or mechanical principles involved in the articulation of the teeth, but simply to bring before you one or two matters of every-day interest. I regret indeed that I am not prepared to lay before you anything new or original, but it has occurred to me that a quarter of an hour might be not altogether wasted in considering some principles and methods of practical interest as viewed from a common standpoint—that, namely, of the "bite"—a standpoint which is, —I am bound to say, judging from prevalent modes of practice, far too frequently overlooked. I certainly need not remind the members of this Society of the fact—evident to the very youngest of Macaulay's school boys—that one jaw or set of teeth is useless without its antagonist, and that the value of even individual teeth must largely depend on the mutually harmonious relations existing between it and its opponents: but that these facts are constantly being forgotten or ignored is, I fear to all of us, a matter of everyday experience.

I propose to group my remarks under the following heads:—

I. The articulation of the teeth in relation to the etiology and treatment of approximal decay.

II. Irregularities of articulation as productive of pathological conditions of the alveola-dental periosteum.

I. *The articulation of the teeth in relation to the etiology and treatment of approximal decay.*

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*A paper read before the Odontological Society of Great Britain.

As a factor in the production of approximal decay the "bite" holds an important place. It is due to the action of the "bite" that food becomes wedged into approximal spaces and by its decomposition promotes decay. Sometimes the very beginning of decay is due to this canse, and even in the larger number of cases where the actual inception of disease occurs before there is any interspace to admit of the lodgment of food, yet when once the coronal wall of the cavity breaks in, allowing food to enter in appreciable quantity, the rate of decay is generally much accelerated and its ravages made to extend rapidly over the whole approximal surface. In those instances where the lodgment of food is the primary cause of decay, the space which admits the food is due to one of three things,—either to simple want of contact in two neighboring teeth, otherwise normal, or to a flat instead of a contour filling having been employed on one or both sides of the space, or to the injudicious use of contour instead of flat fillings.

What can be done in the way of operative interferance to limit, if not entirely to prevent, the action of this predisposing cause to caries—the accumulation of food wedged up between the teeth by the "bite"? Much may be done, on the one hand, by contour fillings, and on the other hand by judiciously shaped spaces, the use of both methods being demanded by the varying conditions met with.

In dealing with "approximal cavities" one's aim must be, so far as possible, to achieve three things:—

(1). To prevent the recurrence of decay.

(2). To render the tooth under treatment useful in mastication.

(3). To prevent the gums from irritation.

One of the first questions one asks oneself when an approximal cavity of any size presents itself for treatment, is whether or not to "contour" the filling to be inserted, and the answer to the question often requires very nice discrimination as to the possibility of decay being prevented, mastication rendered more easy, and the gum protected better by contouring, or by permanent separation.

That "circumstances alter cases" is a very old proverb, but the truth it embodies is very often oveelooked. Too often an operator gets into the way of following indescriminately one method in all cases, either invariably "contouring," or invariably "separating," or worse still, he follows no method at all, simply filling his cavity flush from one wall to another without any regard to contour on the one hand or properly shaped space on the other, and leaving, in consequence, as often as not, an irregular interval between the teeth, such as must inevitably produce rapid mischief.

Too often one meets with cases in which a diseased tooth has been treated—well enough, so far as the individual tooth is concerned, but without any regard to the relation it holds to its adjoining neighbors, to its antagonists in the opposite jaw, or to the gums and mouth as a whole.

Contour filling is desirable, nay, its use is imperatively called for, when by its employment one is able to achieve the three objects already referred to, *i.e.*, prevention of future decay, proper mastication and protection of the gums.

Under what circumstances then, it behooves us to ask, does contour filling accomplish these things better than any other method of treating approximal cavities? The answer is simple, and it is this—when by contouring, the filling can be brought into *close* contact with the adjoining tooth. For, apart from the question of appearance—which we are not discussing now—the whole value of a contour filling lies in its knuckling up to the neighboring tooth so as entirely to prevent the lodgment of food between the two neighbors, this lodgment being the fruitful source of recurrence of decay, irritation of the gums, and inability to properly masticate.

Contour filling is clearly called for, therefore, when the cavity to be treated is in a tooth standing so close to its neighbor as that, a reasonable amount of contouring will restore the normal relation of the two. In the majority of instances this can be done, but the minority cansists of not a few cases in which the diseased tooth stands so apart from its neighbor that a restoration of its normal contour does *not* restore the normal relation of the two teeth, that is to say, there is still a slight space left between them. Under these circumstances contour filling is bad practice, seeing that instead of preventing it favors the retention of food between the teeth. Under these conditions where the approximal space cannot be satisfactorily obliterated by contour filling, recourse must be had to the use of flat fillings and judicious shaping of the surfaces forming the mesial and distal walls of the space. Broadly speaking, this shaping (I am not speaking of front teeth) consists in making the walls divergent, and very smooth and straight. Occasionally, when one's patient can be trusted to make diligent and constant use of quill tooth-picks and floss silk, the space may be made parallel-sided, and so a more extensive grinding surface retained; but as a rule the wedge-shape must be rigorously adhered to. Sometimes, in order at the same time to render the space as non-retentive, and to sacrifice as little tooth-substance as possible, the original space may be deliberately increased by means of gutta-percha or wool and mastic before shaping and filling.

With regard to the value of such spaces, it cannot I think be denied that, properly made and used only where contour work is inadmissible, they conduce to the comfort and safety of both teeth and gums. But it cannot be too strongly maintained that between full contour and wide space there is no middle course, a narrow, irregular space, especially if the walls are allowed in the least degree to converge at the masticating surface, being fatal to both comfort and health. It is by no means easy in every case to determine which to adopt — contour or space. Whilst striving to keep an open mind on the subject, free from undue bias in favor of one method or the other, I should for myself be inclined to say "when in doubt, play contour."

Not infrequently one is called upon to deal with teeth the relation of which to their neighbors and to "the bite" calls for their restoration in contour, but in which disease is so very extensive as to render the wisdom of contour filling very questionable. In these cases the use of all-gold collar crowns is invaluable, or in the case of bicuspids, all gold, faced with porcelain. The particular advantage of this form of crown under the conditions named lies in the fact that it can be contoured out in any direction or to any extent, so that it knuckles tightly against the adjoining teeth, and antagonizes exactly with its opponents; whilst the collar gives a security and finish which can be obtained by no other method, and produces, if properly adjusted, no irritation of the gum after the day of infection. I may say that my own experience of crowning by this method has tended to show me that perfect adaptation of the collar can only be obtained by fitting it to the root in the mouth. I have no faith in the use of a model for fine fitting. And as to the modelling of the articulating surface, there is no question, to my mind, that the best way of producing a natural shape, and at the same time one that will articulate accurately with the the opposing tooth or teeth, is by striking it up on a cast obtained from a wax model, built up and carved for each case, rather than by the use of the die plates sold for the purpose, which make each crown a stereotyped inartistic copy of every other.

There are cases in which partial gold crowns, as they may be called, render excellent service in the preservation of badly decayed teeth and the restoration of comfort in mastication. For example, the mesial half of a tooth may be sound and strong, whilst the distal portion, both approximal and coronal, may be the seat of extensive decay. The amount of sound tissue is such as to make one feel unwarranted in removing it for the sake of inserting a complete crown, whilst the carious cavity is so far-spreading as to make the security and durability of a large filling quite a question of chances. In such a case the contour of the tooth may be fully restored by the nice adjustment of a carefully modelled shell of fine gold, so made as closely to overlap the margins of the cavity. For a method of constructing these partial crowns which possess the essential qualities of rapidity and accuracy, I am indebted to my friend, Mr. Gardiner.

II. *Irregularities of articulation, as productive of pathological conditions of the alveolo-dental periosteum.*

(1) Very familiar to all is the periosteal mischief set up by fillings insufficiently cut down to articulate accurately with antagonizing teeth; and yet it would appear scarcely superfluous to emphasize the importance of due care in the modelling of masticating surfaces, judging by the negligence which is so often displayed in this respect. Where the upper and lower teeth deeply interlock it is sometimes quite surprising how great the indentation that is required on the surface of a filling to allow proper play for the tooth biting against it.

The inflammatory disturbance produced by a filling or an artificial crown left too high varies greatly in intensity. Occasionally periostitis fully pronounced is met with, the gum surrounding the tooth being red and full, the tooth raised in its socket, freely moveable, and very tender to touch. But this is rare; the condition more frequently found being a state rather of irritation than inflammation, or if the latter, then of a subacute or chronic character. Tenderness in mastication is much complained of, and the contact of the tongue may be alleged to cause pain, whilst the gum remains normal, or almost normal in color, and direct pressure exercised by finger or instrument elicits little or no suffering. A curious point about many of these cases is the complaint made of sensitiveness to thermal irritants, such as is generally characteristic of irritation of the pulp.

(2) There are similar cases, so far as symptoms go, in which the mischief is due, not to a badly-finished filling, but to a disagreement in the articulation of one or more teeth produced by the forward pressure of an erupting wisdom tooth. A patient presents himself with considerable periosteal discomfort, if not pain, in a first or second molar, or even a bicuspid. The tooth pointed out may be perfectly free from caries, and give little or no response to the usual tests for periostitis, and one may be disposed to seek for the source of pain as existing in some other tooth, or one may be inclined to look upon the irritation complained of as being a local and temporary manifestation of some constitutional condition. But if the tooth be tested by the use of articulating paper it will be seen that there is an undue amount of pressure exerted upon it by its antagonist, and it will be found on close examination that the teeth have been thrown out of gear, as it were, by the enormous pressure of a wisdom tooth behind them.

(3) In like manner the eruption of the second, and even the first permanent molars, in some few instances, produces similar results, the teeth complained of in the latter class of cases being the first molars themselves, which will be found to bite cusp to cusp, instead of cusp into depression.

(4) Yet again, just as the "bite" may be thrown out by newly erupting teeth, so it may be thrown out with similar results by the extraction of teeth. The extraction of one or more teeth leads sooner or later to more or less change in the articulation of the remaining teeth, and one may find periosteal irritation arising from this cause, although it is not common.

I need not dwell on the treatment to be adopted in all these cases. It is sufficiently simple, and consists in nothing more than the use of corundum wheels to ease undue pressure, indicated by means of articulating paper. Even in the worst cases it is rare indeed for this simple treatment not to be rapidly followed by complete comfort. The difficulty lies not in the operative procedure necessary to a cure, but in successful diagnosis of the cause of pain. It is of some assistance in obscure cases, to bear in mind that the pressure producing the irritation will be found almost invariably to be exercised on one small isolated spot.

DENTAL MEDICAMENTS WITH SPECIAL REFERENCE TO ANTISEPTICS.*

BY J. W. JUNGMAN, D.D.S., CLEVELAND, O.

Experiments of eminent bacteriologists and other scientists have proven beyond a doubt, that bacteria cause and develop abscess of the alveolus, antrum, necrosis and caries of the teeth, therefore the dental surgeon should be familiar with this subject, should know the difference between antiseptics, escharotics, astringents, etc.

Antiseptics are medicinal agents capable of arresting fermentation, thereby preventing the decomposition of organic substances. When these agents are brought in contact with the disease germs they destroy their vitality. Included in this class are carbolic acid, creosote, salicylic acid, boric acid, iodol, peroxide of hydrogen, bichloride of mercury, and many others, but the above named being of more interest to the dentist.

In my practice, which has been of short duration, I have had several cases where antiseptics, astringents, escharotics, etc., were indicated; the principal case that of an abscess of the antrum. A gentleman about 62 years of age came to me with a fistulous opening in the region of the right superior molar which had fallen out by disease (pyorrhœa alveolaris). The bony cavity had nearly closed with the exception of a small crack large enough to admit a spatula. I pronounced it abscess of the antrum, and then proceeded to treat. The first thing I made the opening as large as the end of my little finger to afford free drainage, about a half a drachm of pus exuded therefrom. I syringed the cavity thoroughly with a warm solution of $HgCl_2$ 1 to 3000, then placed a bit of loose cotton in the cavity. This treatment was continued about a week, but not with the best of success, so I used an escharotic to break down that secretory membrane; for an antiseptic wash I used resorcin with good results.

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*Read before the Cleveland Dental Society, February 5, 1891.

This antiseptic is a chemical compound of phenol and aromatic series to which carbolic acid belongs. It is obtained from certain resins by action of fusing alkalies, and is in the form of tabular prismatic, shining crystals, somewhat sweetish to the taste and very soluble in water. This remedy is considered preferable to carbolic acid; it is very valuable to the dentist; it may be applied in all cases where antiseptics are indicated.

Carbolic acid is obtained from coal tar by fractional distillation and subsequent purification, being extracted from the heavy coal tar oils. When pure it is in the form of a colorless acicular interlacing crystals, which at 95° F. become an oily liquid possessing a strong odor and taste closely resembling creosote in characters and properties, although it is a different substance. Much of what is called creosote is nothing but impure carbolic acid. It is one of the most universal antiseptics now in use, it is not only an antiseptic but an escharotic, styptic, stimulant, etc., therefore making it a very valuable remedy in dental therapeutics. When applied to carious dentures it not only obtunds sensibility but arrests putrefactive changes in the devitalized structures and coagulates the albuminous elements at the ends of the dentinal tubuli. It relieves odontalgia when applied to the surface of an exposed and painful pulp, when applied to an exposed pulp it forms by escharotic action an eschar which some regard as conducive to the recovery of the organ, while others regard the quiescent state it produces as an indication of the degeneration of the pulp, and hence prefer to use it in a diluted form. Many object to the odor of the acid, but oil of cloves added to it will disguise its taste and odor to some extent.

Phenol sodique is also extensively employed in dental practice. It is composed of pure melted carbolic acid, 5 parts; solution of caustic potash, 1 part; distilled water, 5 parts. We have many mouth-washes, lotions, etc., which contain carbolic acid, the following wash can be used to good advantage:

℞	Acid carbolic - -	gtt x.
	Glycerine - - -	ʒ ij.
	Aqua - - - -	℥ v.

M. Sig. Use as a gargle.

The Robinson remedy which contains equal parts of caustic potash and carbolic acid has been proven to be a valuable remedy in the treatment of pyorrhœa alveolaris.

Creosote, like carbolic acid, is a valuable agent in dental therapeutics, although the use of the latter has in some respects superseded that of the former and being very similar in their action with some advantage in the case of carbolic acid.

Salicylic acid is also a very valuable agent in dental surgery. It is obtained by combining carbolic acid and caustic potash and subjecting this compound to dry carbonic acid, under the influence of heat and by a process of distillation which liberates the salicylic acid in crystals, the crystals are then washed, dissolved in hot water and by crystalization we have the light brown powder which is then bleached until it is quite white, but most of that sold is of a light cream color with a reddish tinge. It has no odor, a slight taste, and is very soluble in water.

Eucalyptus is another popular agent. It is obtained from eucalyptus globulous found originally in Australia, known as the "blue gum tree." These trees are growing in the southern parts of Europe and United States, and in northern Africa, their presence is said to be a prevention of malaria. The oil of eucalyptus, either alone or combined with iodoform, forms one of the most effective antiseptics in use for the treatment of putrescent pulps of teeth, alveolar abscess, pyorrhœa alveolaris, foul ulcers, etc. Iodoform is a preparation of iodine, being obtained by action of chlorinated lime upon an alcoholic solution of iodide of potassium, heated at 104° F. It is in the form of small crystals of a yellow color, with an unpleasant taste and soft to the touch. It is volatile and soluble in alcohol, chloroform and ether, the fixed and volatile oils, but insoluble in water. This antiseptic possesses no escharotic properties sufficient to cause any irritation or destruction of the soft parts. Dr. C. N. Peirce recommends iodoform ground up with equal parts of oil of cloves and oil of eucalyptus, which forms a substance of a soft cheesy consistency, a portion of which can be introduced to an inflamed part on a point of a small broach. Iodoform is also used as an anodyne for the relief of pain following the extraction of teeth affected with periodontitis. A great objection to iodoform is the unpleasant odor, but this can be disguised to some extent by adding a drop of oil of rose, oil of lavender, oil of cinnamon, or finely ground coffee.

Peroxide of hydrogen is also a valuable agent and at present very extensively used, although it was discovered in 1818. It is obtained by rubbing up peroxide of barium with distilled water so as to form a liquid paste, which is added gradually with constant stirring to distilled water. Acidulated with one-third of its weight of hydrochloric acid, contained in a vessel immersed in a freezing mixture when the muriatic acid is saturated, a fresh quantity of the acid in concentrated state is added, then more of the peroxide of barium, and then the operation repeated till the solution will hold no more chloride of barium, which is deposited by a mixture of ice and salt, except a small portion which is gotten rid of by adding sulphate of silver, the filtered liquid is then concentrated by sulphuric acid, and then the water rising in vapor is absorbed and peroxide of hydrogen is obtained nearly pure in the form of a colorless liquid. Peroxide of hydrogen is used especially in the treatment of alveolar abscess, alveolar pyorrhœa, ulcerations of the mucous membranes, gangrene, cancrum oris, fungus growths, bleaching teeth, etc. The essential oils are valuable dental antiseptics, principally the following: cajeput, cassia, cinnamon, cloves, eugenol, eucalyptus, phenol, mustard, caraway, peppermint, sassafras, thyme, pennyroyal, turpentine, and wintergreen. Oil of cassia diluted with bland oil, like that of wintergreen, is a valuable dressing for putrid root canals and abscesses. Dr. Black recommends the following mixture:

℞	Carbolic acid	1 part.
	Oil cassia	2 parts.
	Oil wintergreen	3 parts.

Mix the oils and add the melted crystals of carbolic acid, this is known as the 1, 2, 3 mixture. Scientists have discovered several good antiseptics within the last two years, but will not dwell upon them this evening.

TOOTHACHE AND NEURALGIA.*

To dear ———:

I have begun two or three letters to you, but each time I was interrupted by a toothache, and perhaps you know how important a toothache can be in its demands for attention when it applies itself well to its business. Those who pretend to have investigated the matter say that it originates in some dissatisfaction or disaffection of a little nerve no larger than a thread, but those who have experienced the phenomenon—and who, therefore, I insist, have the most indubital means of knowing—will surely question this assertion, judging rather, from internal evidence, that it is a nerve at least as big as an oak tree. For how is it possible for a thing so very small to contain an amount of disturbance so enormous?

But they say, too, that magnitude and space are but relative terms, so much so, indeed, that there have not been lacking philosophers who declare that the whole round world with all it contains, exists nowhere else than in the hollow sphere of a man's own brain: one little nerve quivers and we think we see men walking and trees waving, another vibrates and we imagine voices speaking and thunder rolling; everything which seems without us is in reality within us, and due to the excitement of a few threads of nerves. Very well, I can readily accept all this; so when I speak of the interior of my tooth, I have in mind a region at least as large as a State; and when I speak of the throb of the toothache, I have in mind the march of armies and the boom of cannon and all heavy and rythmical noises. And when, the other evening, I settled myself comfortably with pen and paper to write a letter to you, and felt as I began it a premonitory activity in one of my molars, the conception took form within me that that molar was a sort of Fort Sumter, around which besiegers were sending up signal rockets and beating drums, preparatory to the general bombardment. And presently all the batteries opened fire, and there was a thunder of artillery and a shaking of heaven and earth and a whizzing and bursting of shells for the space of an hour. Then I loaded up my guns and responded with round shot in the shape of chamomilla, nux vomica or something, I do not know what, and, wonderful to say, the besieging batteries, after having fired a last shot like a meteor high into the air, suddenly ceased and sank into silence. I went to bed, then, very jubilant over the fact that Fort Sumter had successfully repelled the attack made upon it, but even while I was engaged in rejoicing and officers and men were all getting drunk, no doubt, like Belshazzar, my baffled besiegers were issuing a proclamation calling for seventy-five thousand three months volunteers. The next night, when I had again settled myself comfortably with pen and paper to write you a letter, I heard again the blowing of preliminary bugles and the tramp of approaching legions, seventy-five thousand strong. I will not attempt to describe the tremendous conflict that followed. Let it suffice to say that all in vain I strove to silence their continual cannonade with continual volleys of my round shot, and I retreated at last in disorder to bed, where the battle continued to rage half the night. The last thing that I was conscious of was that the victors were holding a full-dress ball in my tooth to celebrate their triumph, and were all whirling and waltzing away at the maddest speed of exultancy. This battle of Bull Run has not been the last one, but it was the worst: I can generally quiet matters with a dose or two of chamomilla, or whatever it is, and I go to bed blessing medicine. Be a physician, my dear ———, and win the benedictions of humanity by curing them of toothache.

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*This article comprises portions of two letters written by O. E. W. to a medical student friend, and being one of the best description of the toothache that we have ever read we produce it in type for the benefit of our readers.—Ed.

There is no profession greater than that of medicine, none with such unrivalled opportunities for studying our common human nature, and none in which a man can get so close to human souls; but, on the other hand, so far as I can see, there is none so much afflicted with quackery and incompetency. I have known a good many physicians, and, as a rule, they are not very religious men, nor even very moral. I ask them what is the reason for this, and they tell me that it is because they see nothing but the diseased side of men, and so lose faith in them and in everything. Then I say that the true reason is not that but another, that it is because they are handling a keen-edged tool which they are not skillful enough nor good enough to manage, and so they cut themselves in using it. Then they call me an impractical visionary and laugh me to scorn. It may be that I am all that—it is very probable, in fact—but still, is it not an absurdity on the face of it that the beneficent art of healing should make the man who pursues it worse? that doing good should make men bad? It all lies in the motive—as in the case of the magic sword which was apt to slip and hurt the man who wielded it unless he struck in a good cause. I used to think of being a physician—partly because it would give me a wide field of usefulness, and partly, I am afraid, on account of the opportunities it would afford me of indulging the miserable propensity which I possess of trying to put men under a microscope and noting down their peculiarities, as if they were some kind of curious bug. And that would be as bad as practicing medicine for money.

From letter written by O. E. W. to R. B. L., 2–23–'85.

I still have twinges of neuralgia, but their violence is growing less and their intervals longer and I hope by spring to be entirely free from it. I have always been subject to it, as far back as I can remember, and I often had to leave school, once a whole term, on account of it. It used to be altogether in my head and temples, but now it has got into my teeth. This time it was the fault of a perjured old dentist who tinkered at my mouth a couple of days. Just before I was to have started to Washington, I went to see this person to see if anything needed fixing. Yes, there was, and he dug into my teeth with pick-ax and crow-bar; and he plugged up two of them as tight as wax, and assured me that they would never hurt me again all my life. He had his wife help do the plugging. She held a little steel hammer that she pounded with, and as she kept looking out the window all the time to see the people passing, I expected every next blow to fall into my eye, or upon my nose. Neither of these casulties happened, however, for I was reserved for a more terrible fate. It is my firm conviction that ten years ago that dentist sold his soul to the devil, who came after his bargain while I was in the dentist's chair, and I will tell you why I believe this.

Once upon a time there was a blacksmith who fell into serious pecuniary difficulties. While he was sitting in his shop wondering what would be the most comfortable way of committing suicide a stranger appeared and asked him if he would like to borrow some money. "Yes," replied the blacksmith, "but I have no security." "Do not imagine," said the stranger with the politest of bows, "that I should ask you for any. But, just as a matter of form, you know, you might sign your name to this little note." He took a paper from his inner coat-pocket and handed it to the blacksmith, who, reading it over, found that it was an agreement, ten years after date, to deliver up to the bearer his soul. Then of course, the blacksmith perceived that affable visitor was the devil. Nevertheless, he jumped at the bargain, and signed his name to the paper with a little blood from his left arm—as, you know, is usual in such transactions, and the devil handed over his inexhaustible infernal purse of gold, and the two separated with an interchange of polite compliment.

Well, the blacksmith had a gay time for ten years. No matter how much gold he took out of the purse, he always found that it remained as full afterwards as it was before. He ate—whole quarters of oxen, and he drank—whole casks of beer, and he built him a big steam yacht, and went to Congress—perhaps even ran for President as a reform candidate. But at last the ten years were up, and, prompt to the moment, the devil appeared to foreclose his mortgage.

"Oh, yes, certainly," exclaimed the blacksmith, "I will accompany you with the greatest pleasure. But first do me the honor to dine with me, and I will have a few friends in to make your acquaintance."

So the devil stayed to dinner—a quiet little affair, at which there was a senator or two and a member of the Foreign Legation. Every one treated him with the greatest deference and consideration and never before, he thought, had he had a little bill like that settled with such cheerfulness and alacrity. After the wine the devil and the blacksmith walked out into the garden to smoke their cigars, and presently they came to a log into the upper side of which an augur-hole had been bored.

"Funny little augur-hole!" tittered the devil, who had been drinking a little too much: "tee-hee-hee!"

"Yes," replied the blacksmith. "You can do many wonderful things, but I suppose you couldn't make yourself small enough to go into that little augur-hole."

"Ho! Ho! just see!" exclaimed the devil, and in the twinkling of an eye he had changed into a vest-pocket edition of himself, and jumped into the augur-hole. That was all the blacksmith wanted, and instantly clapping a wooden-wedge in the hole, he drove it nearly down to the bottom with one blow of his heavy hammer. Such a screech as burst from the duped and imprisoned devil, with stomach and head and heels all mashed together, like a cake of compressed yeast, I will leave to you to imagine. And by the time the blacksmith had brought down his terrible hammer again, the devil was crying for quarter.

"I want ten years more," said the blacksmith, heaving up his hammer again.

"Yes! yes! take them!" screamed the prisoner: "ten years more if you will only let me out!"

So, having been released and having regained his former size, he limped off, rubbing his bruises and swearing, very sore and lame, indeed.

What happened at the end of the next ten years, and then at the end of the next, it would not be appropriate in this connection to relate, although I chance to know. I simply wished to acquaint you with the historical fact upon which I base the explanation of my neuralgia this winter. I suppose that the dentist had sold his soul to Satan ten years ago. I suppose that the sooty creditor appeared while I was in the chair, and beckoned the dentist to accompany him. "One moment," whispered the dentist, "do you suppose, with your black art, that you could make yourself small enough to slip down into the bottom of the little hole in that tooth? I suppose not."

"Ah, that's nothing!" laughed Satan, and the next moment, there he was, snug at the root of the tooth, and the next moment the dentist had clapped a little pellet of filling upon him and was hammering it down. And he sealed him up there safe and tight, and there he has remained to this day, with what results only that dentist can appreciate, steeped to the eyes in unpunished iniquity; or I, suffering the torments of the Inquisition as that little devil squirms and kicks in the root of my tooth. And, the devil being shut up, that is the reason the world is growing so much better, and Cleveland has been elected.

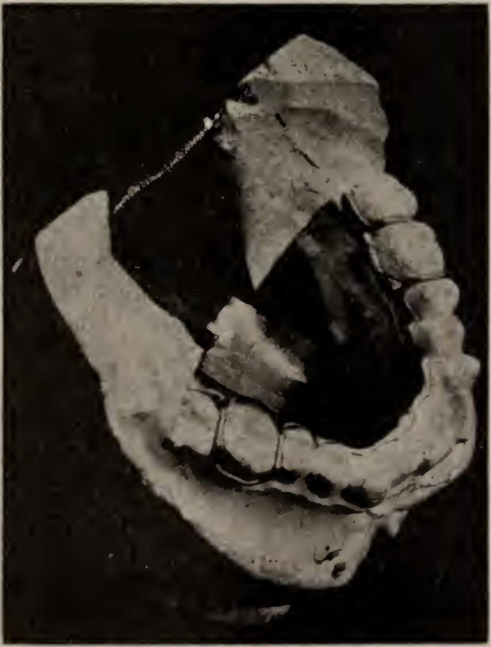
Prosthetic Dentistry.

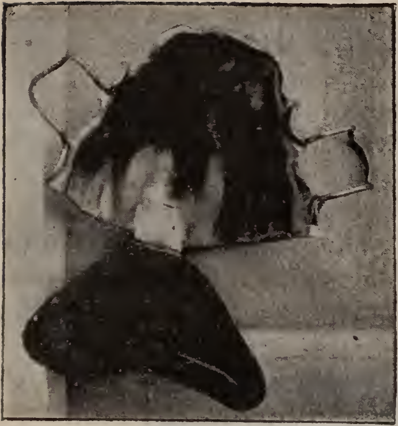
[This department will be devoted exclusively to Prosthetic Dentistry, including Crown and Bridge-Work. We shall be pleased to receive from our readers such practical contributions, short items or queries upon this subject as they choose to contribute.]

METHOD OF FORMING SPRINGS FOR RETAINING DENTURES, OR ARTIFICIAL PALATES.

BY W. H. JACKSON, D.D.S., ANN ARBOR, MICH.

Having a patient with cleft palate, desiring that the deformity be made good by an artificial palate. Upon examination I found it to be a cleft of the soft palate only, the hard palate being perfect and a comparatively perfect set of teeth with the exception of the right superior lateral incisor which was missing. They were all very close together and very strong showing but

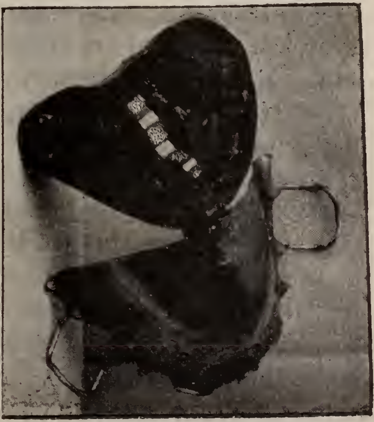




little signs of decay; her speech was about the average of such cases; age 25 years.

It being of the utmost importance in performing operations in the mouth, or making appliances to restore lost parts, or to supply imperfectly formed ones, that we avoid injuring those parts that are perfectly formed, for on the retention of those parts in their most perfect condition, often rests the success of our operations in the future. So to retain the artifical palate in position I found it would be necessary to have a plate cover the roof of the mouth, and that the plate must be anchored or held in position solidly, and to do that the teeth must be used. To clasp them in the usual way would necessitate the filing of eight surfaces of tooth material in position most susceptible to decay, thereby endangering the loss of six teeth in the near future. Another way would be to take out one tooth on each side of the mouth and let the broad band spring pass around the teeth that are left, which would do less injury than the former, but this was the instant loss of two teeth which might in the future possibly serve as a support when other supports had passed away.

A third and better way is to procure gold spring wire No. 16 —English piano wire size—about 18 wire gauge, bend it so as to fit around the palatal curve of the second molar, then at right angles up between the first and second molars, over the notch between them to the gums, curving along the buccal surface of the first molar to the anterior angle, then toward the crown of the teeth as shown in Fig. 1, passing over the masticating sur-



face in the notch between first molar and the second bicuspid, back to the plates curving forward around the palatal neck of the second bicuspid to furnish a good strength in soldering. This avoids all injury of tooth substance. The force of the spring is applied on the buccal surface where it is easily cleaned. The hold on most teeth is excellent and is easy to get at to remove and of such a shape as to hold the least food about it.

It is necessary to have the plate come in contact with the tooth on the palatal surface or the spring will move the tooth from its proper position. This spring can be used as a retainer of almost any appliance in the mouth. There are some teeth that have conical crowns where it is more difficult and may even be impossible to adopt, but they are the exception.

This form of spring is new as far as I know. The nearest approach to it is in an article on regulating appliances by V. H. Jackson, M. D., D. D. S., New York city, in *Cosmos*. I think it will be of value to the profession. It can be used equally as well with either vulcanite or gold plates.

Having fulfilled my main purpose in giving a full description of the spring for retaining the apparatus, it may not be amiss to give a description of the apparatus itself, which consists of a gold plate covering the hard palate to which are soldered the springs that retain it in position, also one strap of a hinge at the posterior border, the other strap being attached to the artificial palate which is of hard vulcanite. I used the hard vulcanite as a matter of economy for the patient, for the soft velums only last from one to two years, it is thin and light and fulfills the object for which it was made. The patient being able to produce all the explosive sounds at will, such as P B T D K Ch and Cr. In fact, to hear her talk any one would hardly believe that it was the same person that first came for relief.

The accompanying cuts will give a better idea than any written description can convey, and if they may assist any one in trouble I shall feel well paid.

LOW FUSING ENAMEL FOR GOLD PLATES.

BY PROF. L. P. HASKELL, CHICAGO.

About forty years ago Dr. Levette, of New York, brought to the attention of the profession an enamel for gold plates. An agent called upon me in Boston to introduce it. I was wearing a small 18k. gold plate, to which he applied the process; it was very pretty to look at and seemed to be worthy of general introduction; to my discomfiture, however, it soon began to chip off: this of course was not pleasant, and I soon removed the balance, fully satisfied that *glass* was not the thing to spread over the surface of an artificial denture. The "improvement" of course was short lived.

"History repeats itself" in dentistry as well as in other matters, and it has been quite a common thing for so-called improvements to flourish for a short time until they were found to be worthless, and then, after a lapse of years, some "genius" would re-discover the thing and bring it forth with great flourish to again demonstrate its worthlessness.

Aside from other considerations, one important feature of an artificial denture is often overlooked, which renders some so-called improvements worthless, viz., the repairing of the same, as, for instance, in the "continuous-gum facings" placed upon rubber. In order to repair, the rubber has to be removed, the repairing done, and a new rubber plate made.

In the case of this *glass* continuous-gum (even if there were no danger of its chipping off and getting into the stomach), when a tooth has broken off, which will constantly occur with no fastening but glass, the case has to be placed in the furnace, and it will, even with the greatest care, crack both teeth and enamel and the dentist will wish he had never been born.

Mr. Editor :—The funniest thing I have seen in the Journal, not even excepting your own wit and humor, is the recent article by a "Travelling Salesman" commenting on some suggestions of mine in regard to needed changes in tooth forms, changes which every dentist I have ever spoken with on the subject endorses, and which every intelligent member of the profession would endorse should he see the change made. But the idea of a travelling salesman dictating to one who for 46 years has devoted his entire attention to artificial teeth, having been engaged in their manufacture for the first eleven years of his experience, is too funny for anything. Dr. Haskell does not "want all teeth made according to his ideas," but does ask that one who uses nothing but *plain rubber teeth* may be able to find, in one case out of ten, a set of teeth suited to the case in hand in all respects, size, shape, color, and especially in the bicuspids and molars, where the principal fault lies in the shape of the cusps, and placing the pins too near the end of the teeth. The "traveling salesman" had better devote his attention to his legitimate business, and leave the dentist to decide for himself what he needs.

L. P. Haskell.

Mr. Editor :—Permit me to emphasize to the profession that there is a difference between London Babbit's metal (The Commercial) and Babbit's metal made after Dr. Haskell's formula.

Dr. Genese, in the Dec. number of your Journal, writes of his experience with the London Babbit metal having found it too soft. This is *Commercial* Babbit metal.

Haskell's Babbit metal has less tin, consequently is harder and *cannot* be hammered out of shape as easily as tin, but makes an absolutely perfect die. Many do not understand that "Haskell's" and the "Commercial" are two entirely different combinations. Haskell's counter die is not lead alone, but lead five parts, tin one, making it softer and should be poured two or three minutes after it will not brown paper (or a pine stick), making a perfect counter die without any danger whatever of its adhering to the die.

A. S. Billings.
Omaha, Neb.

THE STOWELL METHOD OF CROWNING.

The simplicity crown is a combination of old and well-established ideas. It may be that some of you have done the same thing that I am going to show you to-night, and have not given us the benefit of it. I brought into use here a crown which was used I do not know how long ago; it was perhaps one of the first porcelain crowns that ever was made, the old-fashioned pivot tooth. My attachment to the root is by the How screw-post system. The root is prepared, and an old-fashioned pivot tooth ground into position precisely as though you were going to set it with a hickory plug; the end of the root being countersunk, the end of the crown not being materially changed, except as may be necessary to fit it nicely to the root. This is done with a common stump corundum-wheel. The end of the root is then slightly countersunk, a little more than the large wheel has done, with a smaller sized wheel. I then utilize for my fastening a principle with which we are all familiar, and for which Dr. How, of Philadelphia, should receive great praise. I refer to the How screw-post. And let me say here that under no circumstances should that screw-post of Dr. How's, known as the "bright-metal" screw, be used unless you want to get yourself into trouble: it is composed of a base metal (pure nickel), and is wholly unfit for use in the mouth. I hope Dr. How will forgive me for that statement. Use a platinum and iridium dowel. After the root is drilled and tapped out and the How screw-post set, I then cut a groove all around the root with an engine bur, about No. 0. The post being set, the crown is put back into place. The post may be set the full length and then cut off.

In regard to the old pivot tooth-crown, for the use of which I make of it here, I enlarge and deepen the hole a little with a diamond drill, in order that it may have a ground surface instead of a glazed surface inside for the oxyphosphate to stick to.

This groove around the end of the root is to be filled with copper amalgam, which having done, I place the crown back into place and press it down until the excess of copper amalgam is expressed on all sides. I then take the porcelain crown and fill the hole with good strong oxyphosphate of zinc, and press it back into place over the screw-post. As the excess of oxyphosphate presses out on all sides, it carries with it the excess of copper amalgam. I hold it until it hardens; and the simplicity crown is finished.

In this crown I use no gold whatever, and require neither blow-pipe, soldering, nor investments. Just notice what I have left out of the ordinary crown operation. I have not prepared this root around the edge for a band, I have fitted no band to it, and I have not had to wait for the investment to harden, dry out, heat up, and cool off. Again, the copper amalgam over the end of the root forms a cap, and by fitting into the groove forms a ferrule, also, and I claim it is an absolute preventive against decay of that root while that copper amalgam cap is retained. You may say that it will turn dark, but copper amalgam that is not on exposed surfaces will not turn black, but more of a steel-gray.

Now, a crown is no stronger than its weakest point. All porcelain when baked upon platinum dowels or pins has checks in it, which can be seen under the microscope or with the naked eye, and the teeth sometimes break at those points; but a crown which is baked around a hole has no checks. Very rarely have we seen an old-fashioned pivot tooth broken in two. This form of crown I have used for several years without having one broken or checked. I have put it in the most exposed places. In one case I placed two of them upon two central incisor roots for a patient whose occlusion came on the tips of the teeth, and all of the molar teeth being gone the strain of mastication came upon them. I instructed the patient not to spare them; that I would guarantee them not to break. He has used them without fear, and they have become nicked upon the cutting-edge, and yet they have stood for two years solid upon their foundation. The crown represented here [in chart] shows a bicuspid having two holes, which form of crown, so far as I know, has not been put on the market. I have baked it myself. I do not think any dentist is practicing to the best advantage unless he can bake his own porcelain teeth as the case requires.

This method of attachment is equally applicable to bridge-work. We may make that foundation, put in our copper amalgam, and make a gold or porcelain bridge, and perforate it for the dowel and attach with gutta-percha, and get a removable bridge.

One of those bridges I was not more than thirty minutes in making. I fitted on my bicuspid, then set on a bicuspid alongside of it, and fastened them together with tooth-body, inserted a platinum bar, and baked all together. The bar was then secured by filling it into a slot cut in the filling of the adjoining molar. I cannot see why it is not a very strong piece of work. I have not seen one break.

It is applicable to a class of roots which cannot be so strongly crowned, in my opinion, by any other method with which I am familiar. We can take this method of crowning a root broken off or decayed below the gum line; if the gum line comes above the edge of the root, we can with cotton press the gum away, especially with bicuspid roots, and if we can get hold of the root by a good screw-thread of one-eighth of an inch below the surface, we can run those screws in and then restore the rest with copper amalgam, then put on this crown, and we get one that is very strong and that will hold. I cannot attach a crown to such a root as that by any other method. I have several in use where I have gone down below the edge of the gum for attachment, and they are doing good service.

This crown may also be set under water, with the exception of setting the oxyphosphate. The copper amalgam will go into the grooves, or into a root, under water, and set just as good as if put in dry. Gutta-percha may be used instead of oxyphosphate, with good results. I also recommend the "Howland" all-porcelain crown to be set by this method; the bicuspids and molars should be ground out with diamond drill.—Dr. S. S. Stowell, 1*st Dist. So. report*, *Cosmos.*

A CASE OF IRREGULARITY.

Mr. T. G. Read, London, Eng., describes a case of irregularity that he is treating. Patient aged 12½ years; superior incisors and canines were nearly half an inch more forward than the inferior incisors; the lower lip rather thick, and when the mouth was closed filled the space between the two rows of teeth and the inferior teeth bit on the palate. Irregularity believed to be due to lip sucking. The dentitions of all other members of the family are fairly normal. Impressions taken and cast and the bite raised in S. S. White's articulator. An upper vulcanite plate made the bicuspids being capped, and the plate made so that the lower incisors, canines and bicuspids articulate with it. The space where the lower lip rested when the mouth was closed, was filled up by the vulcanite plate. In both sides of the plate in the bicuspid region an eye of gold wire fastened. Metal dies were obtained of the labial surface of the six superior front teeth and a small gold plate struck up to fit over them. This gold plate was attached to the vulcanite by elastic rubber rings which were tied to the gold plate and the eyes of gold wire in the vulcanite plate. Weekly a small amount of the vulcanite behind the prominent teeth has been cut away and the elastic rings renewed. In two months the incisors are nearly drawn in and the molars have elongated, but it is discovered that the patient has renewed the lip sucking habit, the effect is not as previously to drive the upper teeth out as they are now pressed upon by the gold plate and elastic rings, but to press the inferior incisors in. A lower vulcanite plate is now made with a bar of gold wire projecting beyond the lower incisors to prevent the lip from reaching the teeth.

Editors' Specials.

"Write the Vision and make it plain."

THE GERM THEORY OF DENTAL CARIES?

Our friend, Dr. Wardlaw, is reported as responsible for the following: "Particles of food, mucus, or saliva, wedged between the teeth or hid away in some fissure, or being in some depression, or adhering to some protected surface of a tooth, and not removed by friction, nor dissolved nor washed away by the fluids of the mouth, are taken possession of by bacteria, and fermentation begins; lactic acid, the effete matter of the microbes, is formed, and immediately unites with the lime of the enamel; a slight depression is here made, giving more secure lodgment for additional food, and further fermentation continues. The enamel armor is thus gradually pierced, and the less dense dentine is exposed; ingress is had by the bacteria; they consume the organic elements of the dentine; lactic acid is secreted more abundantly; it presses forward in advance, breaking down the walls of the tubuli; the micrococci follow closely on, crowding in and packing full the tubuli; a secure foothold having been obtained, the destruction runs riot, softening and breaking down proceed in all directions, and we have 'caries.'"—*International Journal through Items of Interest.*

We always like to read after Dr. Wardlaw, for he is always in earnest, and has always the courage of his convictions. But it seems, after all, it is necessary to have a little of the acid theory, as it has been called, to splice on to the so-called "bug theory." (The term is not meant to be offensive). But it may be claimed that there is not much acid here; and the little present is furnished by the bugs, and they can better spare it than not, for it is their "effete matter." One place it is spoken of as the product of the microbes, and again it is referred to as a secretion, without our being told what secretes it. The process, as described, is due to chemical action, and how are we to cause more than one variety of caries by the one agent, lactic acid? Scarcely any other ailments of humanity are less alike than black and white decay, and neither of them is or can be caused by lactic acid.

We have just stated that neither the black nor the white variety of caries can be produced by the action of lactic acid. Nor is it possible to produce the most common of all the varieties of caries by this agent. This variety is not readily designated by color; as it differs in this respect, in accordance with various circumstances. Its diagnostic character is that the organic portion of the dentine remains mostly in the cavity of decay for a considerable period after the decay has manifested itself. It cannot be caused by lactic acid because it would "consume the organic elements of the dentine." Lactic acid is characterized by its ability to dissolve both the organic and inorganic parts of dentine; and we now recall but one other ordinary acid that will do it, and that is acetic acid.

Chemical action is definite in its nature. The reagent may be determined by the reaction, just as the experienced hunter is able to recognize the game by its track. Lactic and hydrochloric acid, acting on dentine, in the mouth or out of it, give results resembling each other not more than do the tracks of a deer and a wild turkey. An honest, unprejudiced look at the three varieties of decay, above referred to, will convince any one that they are caused by different reagents.

We are more than anxious to have this question of dental caries settled, and clearly understood before we pass away; but it will not be settled by regarding caries as unitary in its character. Chemical affinity is a fact in science. Elementary matter seems to choose the matter with which it is willing to combine. But there is no will in the process. And the facts are not simplified by the theory that living organisms force combinations by the assertion of will power.

Lactic acid has a definite nature, and it is the same whether formed directly by chemical action, or indirectly as the effete matter of bacteria.

We do not enjoy our difference of opinion on caries, and would be glad to hold with Dr. Wardlaw and others; but as our opinions are honestly held we feel impelled to advocate them. We can't agree with all.

NARROW ESCAPES.

Speaking of this subject Mr. Talmage refers to the case of Job as recorded in the book of Job xix chapter and 20th verse, wherein he says: "I am escaped with the skin of my teeth." Mr. T. takes it the enamel of the teeth is meant by the phrase "skin of my teeth." But that is not very thin. Is it not likely that Nasmyth's membrane is the structure to which allusion is made? Job may not be familiar with physiology; but the Spirit of inspiration is.

PROFITABLE PATCHWORK.

Nothing in surgery is much more interesting than skin grafting. It has received a fresh interest to us lately, as it has been used for the relief of one of our very special friends and former student. We have not yet heard the result, but hope for the best. We allude to the case of Doctor Runyan, of Springfield, Ohio, who for some time has had an open sore of several inches in extent. The surface was too large in extent to heal by ordinary granulation. His friends of the lodge came to the rescue, and a number of them gave each a patch of his own skin to be grafted in where it would do the most good. We would have taken great pleasure in furnishing a piece of our own skin for the doctor's relief; but we were aware that, from prolonged spinal disease, it had become so depraved that it was not fit for such use, and might have defeated the whole process.

"If a man would have friends he must show himself friendly"; and Dr. R. has ever shown himself friendly, and hence receives his reward in his time of need. We shall be delighted to hear of a complete recovery in this interesting case. If all ends well the Doctor will have quite a number of little keepsakes.

What We See and Hear.

[We are always pleased to receive short, practical articles for this department, and invite any to send brief descriptions of such appliances, devices, methods, remedies, etc., as will be of interest to the profession.]

In cleaning teeth mix your pumice with a solution of Castile soap, instead of pure water. It cleans easier, leaving a smooth finish, without the burning of gums and lips, to say nothing of the more serious results of the aromatic sulphuric acid and glycerine preparation, used by so many dentists.—*Items.*

Filling Material.—I use shellac rather thick, then mix the oxide of zinc with it and make a thick paste or putty, and you can incorporate carbolic acid with it, and it makes an excellent stopping. In either temporary fillings for children or root fillings you can insert it, and the moisture will not have any effect on it whatever.—Dr. Burt.

Copper Amalgam.—Experience and observation lead me to condemn the free use of copper amalgam. My conclusion is that its *proper* use requires more judgment, care and skill, than commonly attend the use of any other filling material employed in the conservative treatment of the teeth.—Dr. J. W. Canaday, Albany, N. Y., *Dent. Mirror.*

Which Will You Be?—No man can afford to settle down with the idea that there is nothing more for him to learn. If he does this and sticks to it, he soon becomes fossilized. To be real live men and abreast of the age, we must read the current literature of the day, mingle with men, especially our brother practitioners, and give and take as becomes an honest man and a gentleman.—Dr. Church.

Impermeable Glue.—To make an impermeable glue, soak ordinary glue in water till it softens, and remove it before it has lost its primitive form. After this, dissolve it in linseed oil, over a slow fire, till it is brought to the consistence of a jelly. This glue may be used for joining any kinds of material. In addition to strength and hardness, it has the advantage of resisting the action of water.—*Revue Industrielle.*

For Local Anæsthesia.—At a Philadelphia Hospital, local anæsthesia for minor operations is obtained by combining ten parts of chloroform, fifteen of ether, and one part of menthol, and using the mixture in a hand atomizer. After one minute's application of the spray such a degree of anæsthesia is produced that incisions can be made for the removal of growths, opening a felon or an abscess, without causing pain.

Treatment for Rapidly Decaying Teeth.—Use always aids in health and development. Disuse is a predisposing cause of decay in the teeth. In my practice I have always advised my patients, where they had teeth decaying rapidly, to eat their food as dry as possible, to masticate it thoroughly, and to give the teeth as much use as they could, and that little advice to my patients has been of great assistance to me and of very great advantage to the patients themselves.—Dr. Peirce, *Inter.*

Do You Want to Call Him Brother?—Dr. Westlake: A physician well known in Elizabeth, connected with the hospital, recently rode in the same horse car with me. I asked: "Do you have many oral surgical operations?" "O yes," said he, "quite a number." "Do you have your dental surgeon perform them, as they do in some hospitals?" "No; what good is a dental surgeon except for pulling teeth? If I had an exsection or a resection of the jaw, I would not have a dental surgeon anywhere near me; I would not allow a dental surgeon to operate in the hospital."—*Mirror.*

Safe Corrosive Sublimate Formula.—That people should not drink it by mistake, the London Board of Health uses it as follows: One-half ounce of corrosive sublimate, one ounce of hydrochloric acid, five grains of aniline blue, three gallons of water. As corrosive sublimate coagulates albumen, the acid is added to prevent that, and the blue water prevents it mistaken for water. Otherwise,—Corrosive sublimate, 240 gr.; chlorhydric acid, 1 oz.; aniline blue, 5 gr.; water, 384 oz.; or in small quantities for dental purposes (approximately), corrosive sublimate, 1½ gr.; chlorhydric acid, one drop; aniline blue to color; water, 1 oz.—*Odont. Jour.*

CEMENT AND GOLD.—DR. OLTRAMORE, of Buenos Ayres, described his method of making fillings of cement and gold. He prepares beforehand a piece of gold of the size and approximate shape of the opening of the cavity, by condensing a few cohesive cylinders on a serrated steel plate. He then fills two-thirds of the cavity with an oxyphosphate cement, places his prepared piece of gold on the cement while it is yet soft, and finishes the filling by putting on more cohesive gold, until the desired fulness is arrived at. Dr. Oltramore claims to have good results with these fillings and to save a great deal of labor. Time will test this method.—*Cor. Inter. Jour.*

OXYPHOSPHATE WITH GOLD OR AMALGAM.—Several years ago we called attention to the desirability, sometimes, of nearly filling a large cavity with oxyphosphate, and then, before this cement has set, pressing in crystal gold. This gold can be added to as the cement hardens, and thus the filling finished with gold. This is much cheaper than an all gold filling, and for frail walls better. A dentist called my attention to a similar practice by himself, that he considers quite an improvement in many instances on all gold. The oxyphosphate so thoroughly adheres to the walls that it makes, he thinks, a more durable filling than all gold. Capping a large oxphosphate filling with amalgam is preferable to all amalgam for the same reason.—*Ed. Items.*

THE CORRECT CONTOUR.—I insist that in all cases it is necessary that the greatest care should be had to preserve the form of the interproximate space, or change it to a good form if faulty, and make the proximate contact of such form as will prevent such leakage of food into the interproximate space as will injure the gum septum. If after the filling has been made it is found that the contact is so faulty as to cause injury to the gum septum by leakage of food, or if a contact good at first becomes faulty by after-movement of the teeth, the filling should be reformed for the correction of the evil. Destruction of the gum septum to and beyond the gingival margin of the filling generally means recurrence of caries at the worst point to repair.—Dr. Black, *Cosmos.*

Method of Working Amalgam.—I take scraps of any amalgam that has been laid aside, and on the end of a flat serrated instrument I hold it over a lamp flame, and the mercury will come to the surface or the mass will swell up. It is then in a temporary soft state, which lasts but a few moments, and can be dropped on a tablet and compressed with the instrument so that it will adhere to it. It is then heated again for a moment, and while still soft carried to the filling of fresh amalgam and incorporated with it, and this repeated, if necessary, so that when you get through you have a filling that is sufficiently hard to prevent its breaking down. The patient should be warned that a slight pain will result from the heated amalgam, which, however, lasts but a moment.—Dr. Nash, 1*st Dist. So.*, *Cosmos.*

Welding Platina Scraps.—If it is desired to put platina *scraps* into a usable form again, the following is useful: Take a small piece of gas-pipe and close one end by welding. Put the platina scraps into the open end, and with an iron rammer drive it home. Now heat the pipe to an extreme welding heat, and placing it quickly on an anvil, strike it one or two hard blows with a sledge; or, what is better, put it under a drop or trip hammer. Cut out the portion of the pipe containing the platina, and throw it into nitric acid to dissolve away the iron. This will leave the platina in a mass welded together to be rolled into plates or drawn wire. So large a difference is there between the price paid for scrap platina and that asked for the sheet metal or wire, that this simple process may be of use to many. It is, of course, advisable that no gold or other metals should be mixed with the scraps.—James H. Beebee, *Items.*

Facial Paralysis following Extraction of Teeth.—At a meeting of the Odonto-Chirurgical Society of Scotland, a report of which appears in the *Journal of the British Dental Association*, Mr. Watson mentioned an interesting case of motor and sensory paralysis after tooth extraction. The patient, a lady, had two teeth extracted under the influence of nitrous oxide gas, the second lower bicuspid and first molar. On regaining consciousness she complained of a want of power and feeling in the lip of the side operated on. Examination showed that a portion of the lip in the neighborhood of the mental foramen was insensitive and somewhat powerless. Six months later the part had not quite recovered itself. The accident is a somewhat uncommon one in connection with the removal of teeth so near the anterior portion of the jaw, and Mr. Watson believes the cause in this case to have been a stretching of the inferior dental nerve, which was adherent to, or entangled in the roots of, one or both of the extracted teeth.

SING YOUR SONG BRIEFLY AND SIT DOWN.—It is a noticeable, as well as a somewhat painful, fact that certain individuals who attend the meetings of societies are in the habit of consuming much of the time allotted to gentlemen present for speaking by lengthy harangues, or speeches long drawn out, when the substance of all they impart could be easily summed up in a comparatively few words. As a result, those who are compelled to listen become impatient or weary, and some who are desirous of making remarks are debarred, and find no opportunity for speaking before the hour of adjournment is reached. Why cannot gentlemen be more considerate? If they have anything to say, say it in as clear and concise a manner as possible and give others a chance to do likewise. Do not take hearers around Robin Hood's barn forty times before showing them how you enter, even though you have only a frog to exhibit. Get at the pith of your subject at once, without giving utterance to preliminary showers of irrelevant verbiage. Remember, dear time-monopolists, that "brevity is the soul of wit."—F. in *Inter.*

SELF-LIMITING CAVITIES.—Experience teaches every man that some of these cervical cavities found at juncture of crown and root are self-limiting, therefore should not be touched until the operator finds marked evidences of cessation of the spread of the affection. A brownish spot sometimes shows itself at the gum margin, and in the facial aspect of a canine. The rule says the destructive process should be stopped, that the softened and discolored tissue should be removed, and in its place occupied by filling material of suitable kind. This is done, say prematurely, and with what result? In a few months a little brownish speck appears on each side of this perfectly inserted gold filling. With a small bur these are removed and gold made to take their place, or the original filling is removed and a larger one substituted, in either case at the expense of more or less good tissue. A few months more and we have the same thing over. As already intimated, there is a limit imposed by nature on the extention of these crescent-shaped cavities, both as to depth and their spread laterally. Their final depth, if left to Nature, is hardly more than sufficient to anchor the filling, while their spread laterally ceases at what in the majority of teeth is the most vulnerable of places, the cervico-proximal.—*Odont. Jour.*

Preparation of Root Canals.—The most doubtful and troublesome tooth is the bicuspid; you never can tell whether the two canals are perfectly separate, or whether they are separate at one end and united below, or whether they are connected throughout. I find that where the first bicuspid has two separate roots, there is a certain portion of the pulp chamber which is common to both canals. Where you find a figure 8 in the first bicuspid, it is perfectly safe to unite them as far as the bifurcation. Then you can explore with a flat untempered broach and find whether it is a single or double-rooted tooth, and so determine whether it will be safe to unite these two canals further down.

I use a drill always in filling roots. The more I hear about fine broaches that cut to the end without enlarging the canals, the more I wonder how the dentists fill the roots afterwards. I don't believe that fluid gutta-percha will enter those fine canals. I drill such canals as far as it is safe to drill. I don't say that I drill around the curves exactly, although there are curves that you can drill around. In using a drill a very important point is not to push it too far ahead. I use the small drill first for only a short distance; then I withdraw it and clean out all the debris; then I use my drill again and clean the debris out again with a barbed broach, and so go on until I get to a point where I can feel that I can go no further without passing through the canal wall. Now the question arises whether we have a curve beyond where we drill. Take an untempered broach and if you pass it down and it goes around a curve it will show that curve when you draw it out.—Dr. Ottolengui, *Mirror.*

Societies.

"Wherewith one may edify another."

MEETINGS.

Alabama Dental Association meets annually. Next meeting at Anniston, on the second Tuesday of April, 1891.

Illinois State Dental Society meets at Bloomington, second Tuesday in May, 1891.

Iowa State Dental Society meets annually. Next meeting in Sioux City, on the first Tuesday in May, 1891.

Southern Minnesota Dental Society. Next meeting in Mankato, third Tuesday in April, 1891.

ILLINOIS STATE DENTAL SOCIETY.

The twenty-seventh annual meeting will be held at Bloomington, beginning Tuesday, May 12th, 1891, and continuing four days.

Garrett Newkirk, *Sec'y.*

MISSISSIPPI VALLEY DENTAL ASSOCIATION.

Several of the papers to be read at the 48th meeting of this society are of more than ordinary importance and they will be discussed by men of national reputation on the subjects of which they treat. Attend if you can. The meeting will be held at Lincoln Club Hall, Cincinnati, March 10, 11, 12th, 1891.

J. R. Callahan.

VERMONT STATE DENTAL SOCIETY.

The fifteenth annual meeting of the Vermont State Dental Society will be held at the Bates House, Rutland, Vt., Wednesday, March 18th, continuing three days. A cordial invitation is extended to all members of the profession to be present.

Thos. Mound, *Sec'y*,
Rutland, Vt.

BOARD OF DENTAL EXAMINERS OF THE STATE OF MINNESOTA.

There will be a regular meeting of the Board of Dental Examiners of the State of Minnesota, held at the Medical Dep't of the University in this city on Tuesday, April 7th, for the examination of candidates for license.

H. A. Knight, *Sec'y.*

608½ Nicollet Ave., Minneapolis, Minn.

SECTION III, A. D. A.

Dr. A. W. McCandless, Davenport, Iowa, requests us to give notice that as chairman of the special committee of the above Section on Dental Art and Mechanism, he desires the co-operation of the profession in bringing before the association and also before the Iowa State Dental Society any new appliances and methods of practical value in operative dentistry.

A METHOD OF KEEPING SOCIETY MEMBERS INTERESTED.

The Cleveland Dental Society have adopted a new method of conducting their local society meetings. On the evening of the meeting the members all congregate at the Hollenden Hotel where they partake of a sumptuous supper, and while gathered about the table papers are read and discussed.

NORTHERN OHIO DENTAL ASSOCIATION.

The forty-second annual meeting of this body will be held at Oberlin, O., in the Y. M. C. A. Building, Tuesday, May 12th, 1891, at 10 o'clock a. m., continuing three days. A very interesting program has been prepared, embracing the following subjects, viz.:

"Development of the Teeth," paper by Dr. W. H. Whitslar, of Youngstown, discussion opened by Dr. A. J. Dowds, of Canton; second, "The Recurrence of Decay in Teeth," paper by Dr. J. G. Templeton, of Pittsburg, Pa.; third, paper by Dr. W. H. Atkinson, New York, subject, "Hind Sight," discussion opened by Drs. C. R. Butler, Cleveland, and E. J. Waye, Sandusky; fourth, "Sanitary Condition of the Mouth, and How Best to Maintain It," paper by Dr. J. F. Dougherty, of Canton, discussion opened by Dr. W. T. Jackman, of Cleveland, and Dr. J. H. Wible, of Canton; there will also be presented a number of voluntary papers, incidents of office practice, and several clinics, among which are the following: "A Tin Filling with Gold Facing," by Dr. S. B. Dewey, Cleveland; second, "Electricity Supplemented with a paper," by Dr. Frank Creger, Fremont, O.; third, "Melting an Ingot of Amalgam," followed by a talk on the same, by Dr. J. F. Siddall, Oberlin, O.

This promises to be an unusually interesting meeting and we hope that all the dentists who can will make arrangements to attend and carry with them any new appliances, devices, models of interesting cases, or report of some case in practice.

Any desired information may be had by addressing Dr. Henry Barnes, 106 Euclid Ave., Cleveland, O.

AMERICAN MEDICAL ASSOCIATION, SECTION OF ORAL AND DENTAL SURGERY.

The forty-second session of the American Medical Association will be held in Washington, D. C., on Tuesday, Wednesday, Thursday and Friday, May 5th, 6th, 7th and 8th, commencing on Tuesday at 11 o'clock A. M.

The following is a list of essayists (with subjects) who have promised to prepare papers for the section of Oral and Dental Surgery: 1, Address of the Chairman of Section, Dr. Eugene S. Talbot. 2, Adenoid Growth, Dr. W. H. Atkinson. 3, Treatment of Fractures of the Maxillæ, Dr. Wm. Carr. 4, Genesis of Contour Fillings, illustrated, Dr. Geo. S. Allan. 5, The Teeth of Invertebrate Animals, Dr. A. H. Thompson. 6, A Study in Comparative Dental Anatomy, Dr. Wm. H. Potter. 7, Rheumatic and Gouty Diathesis as Manifested in Diseases of the Peridental Membrane, Dr. John S. Marshall. 8, Dental Infirmary Patients

—The Use and Abuse of Dental Charity, Dr. Richard Grady. 9, Growth of the Cementum, Dr. R. R. Andrews. 10, Remarks on Incipient Necrosis and Caries, Dr. J. L. Williams. 11, Choice of Therapeutic Filling Materials, Dr. W. A. Allport. 12, ———, Dr. J. Taft. 13, Thorough Dentistry *vs.* Partial Dental Surgery, Dr. J. Y. Crawford. 14, ———, Dr. Thos. Fillebrown.

Other members who desire to read papers before this Section, should, as required by the by-laws, forward the paper, or its *title* and *length*, to the chairman, Dr. Eugene S. Talbot, 125 State St., Chicago, Ill., one month before the meeting.

Henry W. Morgan, *Sec'y.*

THE DENTAL PROTECTIVE ASSOCIATION.

The second annual meeting was held at the Grand Pacific Hotel, Chicago, Dec. 16th, 1890. The President, Dr. Crouse, called the meeting to order and spoke as follows:

Our second year closes full of encouragement. Last year at our first annual meeting we had represented, in person and by proxy, 648 members. This our second annual meeting is represented by nearly 1500 members showing that the membership has more than doubled during the year.

We have driven the Tooth Crown Company from Milwaukee where they had commenced suits against five members. Our attorneys entered a motion asking the Court to set and limit the time when all the testimony should be presented by the Crown Company. After hearing the arguments of the Counsel on both sides, the Court limited the time to twenty days and before it was up the Tooth Crown Company withdrew all the suits at their own cost. A similar move in Baltimore, where six of our members had been sued, and we had taken charge of their suits, caused the Crown Company to withdraw all these suits at their own cost. This demonstrates the correctness of what we have all along claimed that the International Tooth Crown Company did not dare to enter into a fair contest as to validity of their patents.

They have now commenced suits in New York and answers will be filed in due time. We accept licensees on the same terms as others and afford them the same protection with the exception of a few licensees located in a very limited portion of the country.

The Dental Protective Association has been giving absolute protection to the entire dental profession, while, thus far, less than one-tenth of the whole number have joined our Association.

We want every member of the profession to unite with us. Ten dollars is but a trifle for each dentist to pay for the protection and benefits he receives. Think of 15,000 dentists in one Association! Who can estimate the great good that such an organization can accomplish? Is it a dream? No! I expect to live to see it. It only depends upon the amount of exertion the present 1500 members put forth. Let every member during the year get three new members. It will be an easy way to treble our membership which is the great work of the coming year.

We have saved the Dental Profession a million of dollars the past year and better still saved many of its members the humiliation of signing a license that robs a man of his manhood.

I want a committee appointed from this Association to examine our books and methods of doing the work.

On motion, Drs. Gilmer, Fernandez and Ames were selected.

The election of a Board of Directors resulted in J. N. Crouse, T. W. Brophy, and E. D. Swain being elected their own successors. After further routine business the meeting adjourned.

E. D. Swain, J. N. Crouse,
Secretary. *President.*

After a careful examination of the management and accounts of the Protective Association of the United States, for the year to date, we have come to the conclusion that it is being managed carefully, economically, and with good judgment.

We know positively that the chairman is giving to this work much thought and time, which is the same as money to him; that during the year he has attended several dental meetings in the interest of the Association; that he has devoted much time and labor to organizing the profession and in attending to its litigation, and that he has done all this entirely at his own expense and without one dollar of cost to the Association.

The entire office expense of the Association for the year amounts to $240 and that for clerical help.

The Protective Asociation is saving hundreds of thousands of dollars annually to the profession, and we believe it to be the duty of every practicing dentist to assist its grand work by paying the membership fee and becoming identified with the Association.

It is certainly unjust that a few should bear the entire expense for the benefit of the whole profession, and it is demoralizing to those who quietly accept the fruit of this injustice.

We would further recommend that, as soon as the management think it advisable, after due notice to the profession, the books be closed, and the protection of the Association be withheld from non-members.

THOS. L. GILMER,
E. M. S. FERNANDEZ, } Committee.
W. B. AMES,

WHEREAS, Dr. J. N. Crouse, of Chicago, Ill., the chairman of the Dental Protective Association of the United States, is personally known by the President and other members of the San Francisco Dental Association to be an honest, earnest and enthusiastic worker for the good of the profession; therefore be it

Resolved, That this Association endorses the methods of Dr. Crouse in conducting the Dental Protective Association and strongly urges every dentist of the Pacific coast to become a member of said Association; and be it also

Resolved, That a copy of this resolution, signed by the President and the Secretary, be forwarded to Dr. Crouse, with permission to insert it in each circular that he sends to this coast.

CHAS. E. POST, D.D.S., *Rec. Secretary.*
THOS. N. IGLEHART, *President.*

Our Aftermath.

A MAN too busy to take care of his health is like a workman too busy to take care of his tools.

WORTH $ NOW.—In the Demidoff museum, Russia, there is a lump of native platinum weighing 21 pounds troy. At $20 an ounce it would bring a snug sum.

THE ARCHIVES OF DENTISTRY takes a new start, one month late, with Dr. John G. Harper, 800 Pine street, St. Louis, Mo., as editor (and the State editors where are they?)

A CORNER IN RUBBER is being engineered by a syndicate formed in Brazil to control the Para product. It is said that the company has a capital stock of $10,000,000 which was all taken in one day in Rio and Para last January.

THE ISAAC KNAPP DENTAL COTERIE, of Ft. Wayne, Ind., was recently organized. President, S. B. Hartman, A.M., D.D.S.; Secretary, M. A. Mason, D.D.S. Meetings are held the first and third Tuesday evenings of each month.

BLACK GOLD is a natural alloy of gold and bismuth found at Maldon, Victoria. McIvor gives its composition as gold 64:211; bismuth, 34:398; and silicious matter, 1:391. The ore is crystalline, malleable, and of silver-white luster when freshly broken; but it turns black on exposure.

THE $10.00 that you have not sent to Dr. Crouse, will do you more good if sent at once, than it will the Dental Protective Association, but those who have already paid are really protecting you who have not. Is it fair? Read the report of the annual meeting on another page and send the ten dollars now.

THE ELECTRIC VIBRATOR MAN, from Illinois of course, has been "doing" Ohio for the sale of office-rights for the painless extraction of teeth. One victim (a dentist), after having a tooth taken out, remarked that if such was painless dentistry he didn't want any of the other kind, adding that "it hurt like the devil."

A FRENCH PHYSICIAN, it is said, encourages groaning and crying during surgical operations, because patients who yield to their emotions recover more quickly than those who suppress them from a feeling that it is an exhibition of weakness. We always encourage our patients to give way to any tendency to cry or groan and have noticed that those who fainted or became nauseated, after an operation, had invariably suppressed any outward sign of their suffering.—W. H. S.

STATES IN WHICH DIPLOMAS FROM REPUTABLE SCHOOLS ARE NOT HONORED.—In response to many inquiries, we will say that graduates in dentistry are required to stand examinations before registration, in Massachusetts, New Jersey, Minnesota and Colorado. We sincerely hope the number will never be increased. It is an example of over legislation such as all State governments are apt to pass when short-sighted prejudiced minds in their mistaken zeal endeavor to control this sort of legislation.—*Odont. Jour.*

"NEW METHOD OF OPERATING.—Take a common low rocking chair, on which place your patient. Let him open wide his mouth. The operator then with one hand holds in his mouth the mirror, and with the other handles his instruments. This is applicable to only the upper teeth. We are told that it avoids the necessity of stooping, the glass reflecting the teeth so that the operator can see what he is at without stooping to get a direct view of the cavity, as in ordinary cases. The above plan is by one of our young Dentists, and when *patented* will be offered for use to the profession."—Cin. Ed. in *Dental Register*, January, 1848. [Dr. James Taylor was the Cin.

Ed. at the time. Now that the "method" has come into general use it would be interesting to know who the young Dentist was.]

MEDICATED CEMENT FILLINGS.—For nearly fourteen years we have made a practice of lining cavities, where necessary, with a mixture of *carbolized resin* and the *oxychloride* of zinc cement. In cases of accidental exposure of the pulp, or where it is covered by only a thin layer of dentine, protect it with a thin piece of asbestos felt saturated in copal-ether varnish. If the object in using medicated cement fillings, as recently advocated, is to get a continuous therapeutic effect on the dentine, the above gives better results than medicated oxyphosphate fillings. An objection to the chloride is the pain sometimes following its use, but that is only temporary while the good effects are lasting. Another objection is that pulps sometimes die under the oxychloride fillings, but they sometimes die under any kind of filling.—W.H.S.

THE VALUE OF KNOWLEDGE.—A Brooklyn manufacturer paid a bill without a murmur the other day simply on the way it was worded. His engineer found that the hot-water pump would not work and he sent for a machinist. The latter bothered with it half a day and said it must come apart. This meant a stoppage of the factory for a long time. It was suggested that a neighboring engineer be sent for, as he was a sort of genius in the matter of machinery. He came, and after studying the pump a while he took a hammer and gave three sharp raps over the valve. "I reckon she'll go now," he quietly said, and putting on the steam "she" did go. "The next day," says the manufacturer, "I received a bill from him for $25.50. The price amazed me, but when I had examined the items I drew a check at once. The bill read this way: 'Messrs. Blank & Co. Dr. to John Smith. For fixing pump, 50c.; for knowing how, $25.' Had he charged me $25.50 for fixing the pump I should have considered it exorbitant. But fifty cents was reasonable, and I recognized the value of knowledge, so I paid the bill and said nothing."—*Ex.*

THE OHIO MEDICAL UNIVERSITY is a new institution recently incorporated in Ohio, to be located at Columbus. The new university will consist in a department of medicine and surgery, *a department* each *of dentistry*, pharmacy, midwifery, and a training school for nurses; and will be supplemented by a large new hospital, the gift of a number of the wealthy, philanthropic Protestants of that city, and which is said will cost about $200,000 when completed.

The incorporators of this new school are: Mr. George M. Peters, a prominent millionaire; Mr. William M. Mutchmore, an influential druggist; Dr. J. F. Baldwin, editor of the *Columbus Medical Journal;* Dr. John W. Wright, oculist for the Columbus, Hocking Valley & Toledo, and B. & O. Railroads: Dr. R. Harvey Reed, treasurer of the National Association of Railway Surgeons, Mansfield, O.; Dr. A. E. Evans, surgeon of the C. C. C. & St L. R. R., Columbus; *Dr. A. F. Emminger, a prominent dentist of Columbus;* and Dr. S. L. McCurdy, surgeon of the Pa. R. R., Dennison, O. One of the prominent features of the new university will be the abandoning of the old-fashioned system of instruction by lectures, and adopting, instead, the new plan of class teaching, similar to the methods now employed in the literary colleges. A graded course of three years of nine months each is to be adopted, which will include daily examinations and grading of the students, thus doing away with the necessity of a final examination.

This new method of teaching medicine, and allied sciences, has been agitated for years in a majority of the leading medical journals of this country and Europe, but we believe this is the first school to organize on the new plan. It is expected to have everything in readiness to open the new university about the first of October next.—*Jour. Amer. Med. Ass'n.*

WHAT THE NEWSPAPERS ARE SAYING ABOUT US.—Dr. F. C. Runyan, of Springfield, Ohio, recently underwent an operation for necrosis of the tibia of his right leg. Skin-grafting was necessary and fourteen of his fellow-masons supplied the cuticle January 25.--Somebody has stolen the sign of Dr. A. J. F. Buxbaum, Cincinnati.—Dr. M. A. Schutt, of Laporte, Indiana, was arrested for bunko-steering, the victim claiming to have lost $2,300 in April, 1887. Dr. Schutt claims that it is an attempt at blackmail.—At Caldwell, Ohio, Gordon Hutchins was given the wrong package by a druggist and took a teaspoonful of a dentist's local anæsthetic compound of aconite and cocaine. After heroic treatment by two doctors he is out of danger. LIFE IN A NEW YORK APARTMENT HOUSE.—"I'd like to have this tooth of mine fixed. The filling has fallen out, leaving a sharp edge that is continually cutting my tongue," said I.

My friend went to the telephone. In about twenty minutes a young man with a satchel appeared from a dentist shop on the same square. He sat me in a chair in my friend's den, and turned the full power of an incandescent light into my capacious mouth. After ten minutes of quiet scraping, filing and punching, he said: "That will fix you all right temporarily and relieve you of the trouble until you can have a permanent job done."—F. D. M. in *Cin. Com. Gazette.* A MISSIONARY speaking of the Burmese and Siamese habit of staining the teeth says: "It is erroneously believed that the color of their teeth is caused by their practice of chewing bete nut mixed with lime. The fact is that the color is produced by a regular process. The kernel of the cocoanut is first charred, and then ground up with the oil until it forms a kind of paste. This, by some method only known to certain special practitioners among the natives, is converted into a regular black varnish. This is applied to the teeth, and at once becomes equally as hard as the teeth, so that the action of eating does not affect it in the least."—*Phila. Inquirer.* THE Methodist Episcopal Church has expended $3,000,000 in the past twenty-five years for educational purposes, in the Southern States. There are forty-three institutions with three hundred and fifteen teachers and nine thousand pupils. They include schools in dentistry and pharmacy for whites and blacks.—Dr. Samuel A. Kiser, of Fostoria, Ohio, died from hemorrhage of the brain, January 19th. Supposed cause, worry over his arrest last November for alleged criminal assault on a patient. The grand jury had ignored the case, but the matter weighed on the Doctor's mind until he was taken down with typhoid fever, ending as above.—A mastodon's tooth, weighing seven pounds, was found near Greencastle, Indiana, January 25th.

Here it is Again.—The Chinese have a delightful way of extracting teeth. The native dentist is far ahead of the profession in this country. A powder (the ingredients are not given, and I believe it is a secret; it may, however, be similar to the liquid used by corn doctors in their profession) is rubbed on the gum and in a few minutes, five or six, the patient takes a strong snuff and out comes the tooth with the sneeze. In severe cases the tooth can easily be removed with a light pair of forceps. The pain is trifling and the flow of blood very little.—*Cin. Com. Gazette.* A pair of false teeth in a pawnbroker's window in Washington bears the following inscription: "Will fit any mouth of proper size." This, we presume, excludes members of both the Senate and the House.—*Art in Adv.*

Books and Pamphlets.

CATCHING'S COMPENDIUM OF PRACTICAL DENTISTRY FOR 1890. By B. H. Catching, D. D. S. Published by the author at Atlanta, Ga. Price, cloth $2.50.

This work is a compilation of the best practical thoughts given to the dental profession during the past year through the various dental publications, and is dedicated to the dental editors. It is divided into seven departments: Operative Dentistry, Prosthetic Dentisry, Crown and Bridge-Work, Orthodontia, Dental Medicine, Oral Surgery, and miscellaneous. The articles have been carefully selected and are thoroughly practical making a valuable reference book for the dental practitioner. The volume contains 259 pages and 244 selected articles. Aside from these it contains a list of all the dental publications and of books pertaining to dentistry that have been published during the past year. The work is to be issued annually and the volumes will form a very complete cyclopedia of practical dentistry. We think no dentist can afford to be without this annual and advise all of our readers to secure it. It is neatly printed and bound and illustrated with numerous engravings. To secure the book address Dr. B. H. Catching, Atlanta, Ga.

A DICTIONARY OF DENTAL SCIENCE. By Chapin A. Harris, M.D., D.D.S. Fifth edition carefully revised and enlarged by F. J. S. Gorgas, M.D., D.D.S. Philadelphia: P. Blakiston, Son & Co., Publishers. 1891.

A standard work like this needs no review, for dentists are so familiar with it that the mere announcement of a new edition is sufficient. It may be of interest, however, to state in what way this fifth edition varies from the others. The editor has endeavored to make it more purely dental, by eliminating many words not applying to dentistry and incorporating many hundred new words which are useful to the practitioner and student. All the best authorities have been consulted and brief descriptions of the new appliances and operations adopted by the profession since the last edition have been incorporated. The printing and general appearance are excellent, characteristic of this well known firm.

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"A word fitly spoken is like apples of gold."—SOLOMON.

MORBID GROWTH OF GUMS.—A CASE IN PRACTICE.

BY W. H. JACKSON, D.D.S., ANN ARBOR, MICH.

MISS ———, age 14. Complexion, light; eyes, blue; hair, dark brown; stature, medium; lips much swollen, the lower rolling to the chin, upper nearly reaching the nose, both covered with a thick black scab from angle to angle of the mouth two and a half inches, and from superior border of upper lip to inferior border of lower lip one and one-half inches; mucus constantly streaming from the mouth. Being unable to expectorate it required constant wiping, and it was so ropey that she had to make a ball of her handkerchief and keep rolling this, winding the mucus on it until the end of the rope came. Breath extremely fetid, so much so as to pervade the whole room in a few minutes. Teeth not to be seen, the gums completely hiding them. Gums greatly tumefied both externally and internally, superior and inferior, from tuberosity to tuberosity, and from ramus to ramus; bleeding at the slightest touch; soft, spongy, bright red; hemorrhage hard to stop when once started. When the jaws were closed nothing but the tumefied gums came in contact, being unable to partake of any solid food for eighteen months previous. Unable to open the mouth but very slightly on account of the pain from cracking and pulling of the scab covering the lips, which was fully one-eighth inch thick in places.

History.—About twenty months previous, treatment was commenced for the removal of a small goitre, there being but a slight enlargement of the gland. Shortly afterward the teeth became sore, although there was no excessive flow of saliva as in ptyalism. The soreness increased so much that she was not able to masticate her food. From that time to the present she has taken no solid food. Has been under constant treatment by physicians of her own city or physicians of note in a larger city, also consulting with others, among them Dr. Frothingham, then of the University of Michigan, who called me in to see whether or not the teeth had anything to do with the trouble, and if they did to extract them. This was my first introduction to the patient.

After an hour's examination, believing the teeth were innocent of the cause and that to extract them would only aggravate the case and might possibly cause a fatal hemorrhage, I so expressed myself to the physicians, stating my belief that a certain line of treatment would cure the patient and save to her a full set of sound teeth except one. They both left the case in my hands.

Treatment.—First removed the scab in such a manner as not to irritate the raw surfaces beneath, by using a mixture of tepid water with a little iodine, carbolic acid and glycerine, soaking the parts and then gently lifting the scab with a sable brush. When it was fully removed I found there was no epithelium covering the lips, and they were so sensitive that it was almost impossible to work in the mouth, but by care succeeded in removing the most of the sordes on the articulating surfaces of the teeth by passing the instrument between the folds of the gums; then applied a saturated solution of iodine—

℞	Iodine crystals - - - -	ʒ ij.
	Carbolic acid - - - -	ʒ ss.
	Glycerine - - - - -	℥ iij.

M.

working it in through the folds of the gums thoroughly. Also directed her to sleep with a cloth over the mouth wet in

Water - - - - - ℥jv.
Above iodine solution - minims viii.

and to wear it during the day time. Administered iodide of potassium in light doses internally, feeling assured that it would be beneficial to the patient if the trouble arose from the disease being driven to the gums or from the remedies used to cure it. The action of the treatment was as anticipated. A thorough application to the gums was made three times a day for three weeks of the saturated solution of iodine, etc. The cloth kept constantly on the mouth and moistened, as at first, and the mouth cleansed as thoroughly as possible morning and evening. The mucous membrane of the whole mouth was covered by sordes which could be scraped off in large quantities. Little pits filled with this sordes thickly studded the mucous membrane, from the gum to where it was reflected to the inner surface of cheek and lips, sometimes penetrating the mucous membrane a line deep. The character of the sordes was like that of typhoid fever. Was not found on the buccal or lingual portions of the teeth until the gums receded enough for the teeth to be seen and then it began to collect. The swelling had entirely left the lips in three days. They had been so long distended that the obicularis muscle had lost all power to contract and the lips lay in folds. The gums did not yield as readily, it being a week before they were reduced enough to expose the teeth all around. At the close of three weeks the tumefaction had so nearly passed away that the patient could masticate soft food such as bread, potatoes, etc. There could be seen fine lines of epithelium creeping over the lips, although still mostly raw and sensitive. The muscles of the mouth had resumed their functions though still weak.

I now allowed the patient to return home with the understanding that she would come once a week. Applied the saturated solution of iodine, etc., locally morning and evening, and for constitutional treatment gave Winchester's preparation of Churchill's hypophosphites of lime and soda. Within two months the patient gained twenty pounds. Epithelium covered the lips, gums nearly normal as to size, yet there was a fine red line along the margin of the gums which showed a tendency to return, and the teeth were tender to hard chewing. Chloride of zinc, peroxide of hydrogen, nitrate of silver and many other remedies seemed only to aggravate, and the same with excision. Reduced local applications to twice a week and constitutional treatment the same as before. Dismissed patient to return in one month, and monthly through the year. Saw her quarterly for two years more when the last trace of redness had disappeared, the gums looking perfectly healthy. The last year substituted one part cider vinegar and two parts water for iodine solution, using cloth to rub the gums.

WHY COPPER AMALGAM SOMETIMES WASTES IN THE MOUTH.*

BY W. B. AMES, D.D.S., CHICAGO, ILL.

Inasmuch as many of us have for several years been endeavoring to attain to some definite knowledge of the physical properties and peculiarities of amalgamated copper, and as my convictions, derived from an experience of ten years in the use and four years in the manufacture of the material are somewhat at variance with those of some gentlemen who have written and spoken on the subject, I have concluded to bring it before this society for consideration.

The most serious shortcoming that has been urged against copper amalgam as an offset to its many valuable characteristics, is the tendency in many cases to waste or cup out, and it has seemed to many to be a sufficiently serious objection to cause its abandonment, or to make it necessary to first make a test filling to discover whether the use of this material was warranted in the mouth of the patient in hand. My faith in the material has never been shattered, for the reason that, although some of my most conscientious efforts in the making and use of it, have resulted in more or less dismal failure, I have had the conviction that the difficulty was to be attributed to the faulty processes and methods of making and using rather than to inseparable peculiarities. This conviction was backed by having used some time since a quantity of copper amalgam called Sullivan's, made for the Dental Mfg. Co., London, which differs materially from the "Sullivan's" furnished by Ash & Sons. This amalgam I found to stand in mouths in which all other preparations of the kind would waste to a greater or less extent, and furnished me the incentive to labor toward ascertaining the cause of the lack of stability of other copper amalgams. That the wasting was most serious in what is termed acid mouths, was not a very tangible clue to start upon, yet it was most natural to consider first what solvents of the constituents of copper amalgam we might naturally have within the mouth. It would be unreasonable to suppose that there was ever a condition of the saliva sufficiently acid to dissolve copper and mercury to the extent that we often see, unless the action was in some way intensified, as these metals are only soluble in nitric acid and the more powerfuly nitro-muriatic, unless the less energetic acids be used in connection with a galvanic couplet, *i. e.*, as the fluid of a battery of which one of these metals is the positive element or as the electrolyte with one of the metals in question as the anode. In the case of copper there might be a very slight wasting from oxidation and sulpuretting of the surface, these compounds being either dissolved or worn from the surface so that there might be a continuance reformation, but in the case of the mercury which is the metal which is supposed to be presented upon the surface, there could be no such wasting, as it does not oxidize under the conditions present and the sulphuret which is the compound formed in the cold state, would be a very tenacious and insoluble film. The black film which the fillings take on which do not show any evidence of wear is undoubtedly the black sulphuret of mercury —that being the compound that is formed when mercury and sulphur are brought together in the cold state.

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* Read before the Mississippi Valley Dental Society, held at Cincinnati, March, 1891.

The only tangible clue to the solution of copper amalgam in the mouth seemed to be the fact that outside of the mouth the galvanic current would cause the solution of its components in the weak acids and the phenomena observed in the mouth, in the more rapid wasting of those fillings which were so placed as to form the positive element of a battery, the negative element of which was an adjoining or occluding gold filling or crown.

Starting with this as a clue, it was natural to take notice of the fact that many of the copper amalgams when made at all dry, presented the appearance of being composed of copper amalgam and free copper, the surface showing in some specimens almost a copper colored surface, and it was most natural to question whether or not this free copper was the positive element and the amalgamated portion the negative element of a galvanic battery when placed in the fluids of some mouths. This would readily account for the entire phenomena, for it would be analagous to the solution of impure, unamalgamated zinc in dilute sulphuric acid where the same zinc with an amalgamated surface is not dissolved. Upon treating with a solution of mercurious nitrate amalgams containing free copper, it was found that the nature of the material was radically changed, a much more thorough amalgamation being brought about, and with it much better results being obtained in the mouth.

Now what is the cause of this free copper in copper amalgam? With that of my own manufacture it was largely due to an extensive grinding of the amalgamated copper crystals in a mill devised for the purpose, with a view to giving it smoothness and a more desirable plasticity. It has been the general opinion, I think, that copper amalgam could not be triturated too extensively by the manufacturer or by the dentist at the time of using. In several published descriptions of methods of producing the material, great stress has been placed on the heating and rubbing down and repeating this until sufficient mercury had been worked out and smoothness obtained. On account of results observed in using amalgam made by myself by a large variety of processes, I decided some time since that all or any grinding was bad for the material, and that the only heat that it should have was that given to it by the dentist at the time of its preparation for the filling. When the amalgamation of the copper is obtained by precipitating it upon the surface of a mass of mercury by the use of electricity, as I originally made the material, the first crystallization takes place with a large surplus of mercury, so that heat is absolutely necessary to put it in marketable condition, and unless the copper has been precipitated in a uniformly fine state, the grinding must be resorted to, whereas, if the copper is precipitated upon some other than a mercury surface and the amalgamation of a proper quantity effected by the use of proper chemicals, the excess of mercury can be worked out and the material put into marketable condition without heat and without grinding. That heating, and especially repeated heating, is bad for copper amalgam where the very best results are required, is unquestionable, as the 250° F. that is required to break up the crystals and set mercury free, is sufficient to volatilize the mercury to a very appreciable extent, as can be seen by holding a piece of gold over the amalgam during the process. While I do not consider careful heating to be as injurious as the extensive trituration that has been so generally advised, I think that it is well to use only fresh amalgam in such cases as we have reason to fear that wasting might take place.

With copper amalgam in which the copper precipitate has been carefully amalgamated, and the amalgamation has not been disturbed by heat or grinding, we have a material that will have permanency and stability in the most acid mouth.

Where a filling has wasted, it has in nearly all cases a surface to which fresh amalgam will readily attach, so that these fillings can be easily flushed out, and if this is done with an amalgam that has the proper stability, the filling is practically as good as if the wasting had not taken place.

DISCUSSION.

The discussion of Dr. Ames' paper was opened by Dr. L. E. Custer, Dayton, O.

The general explanation of the cause of the waste of amalgamated copper fillings has been that it was due to an acid condition of the saliva — that saliva of an acid reaction would dissolve these fillings. 1st. If the saliva is acid of sufficient strength to dissolve the copper or mercury of a copper amalgam filling, it would not only attack the enamel of the teeth but it would in like manner act upon the silver, tin, zinc, platinum or gold, or whatever metals may compose an ordinary alloyed amalgam filling some of which are more easily soluble than copper. A common amalgam filling does not disappear from this cause. 2nd. If copper amalgam fillings are dissolved by an acid, they should waste pretty equally all over their surface, which in all cases they do not. 3rd. Some copper amalgam fillings waste while others in the same mouth do not. This would not occur if it is due to an acid saliva. 4th. If copper amalgam is susceptible at all to the action of acids, as solvents they should waste between the teeth where acids, the product of fermentation of food particles, are generated. And finally, copper amalgams sometimes waste in an alkaline saliva as well as one of acid reaction.

The fact is, gentlemen, that saliva of an acid reaction is not the direct cause of the waste of copper amalgam fillings, but is simply a condition which favors the waste of certain kinds of copper amalgams which characterized the first attempts at its manufacture in this country. Because the waste of some copper amalgams occurred in an acid saliva, it is no proof that this fluid is a solvent; but by this coincidence we are led to the belief that there is in some way a connection between the two.

In order to understand what this relation is we must go down to first principles, as in the paper just read. We must first know what copper amalgam is; what changes it is likely to undergo in the mouth, and under what conditions it would most likely lose substance.

This material consists of copper particles in a fine state of division whose surfaces are more or less amalgamated. If this amalgamation is perfect there will be no copper surface exposed at all, yet if one of these particles be broken in two its whole inside will present a clean copper surface. We must understand that there is no fusion of one metal into the other. In a filling these metals are like the bricks and mortar of a house. The mercury is represented by the mortar and the copper particles by the bricks.

Whether these copper particles are entirely amalgamated or only partially so is a very important thing to be taken into consideration. A second consideration is in regard to the proportion of mercury. There may be simply enough to thoroughly amalgamate the copper particles or there may be enough to float them about. A third consideration is in regard to the manner in which it is handled by the operator preparatory to filling.

These conditions are in regard to the material itself. But there are two other factors which come from without which must be considered; these are the saliva and attrition. All these conditions and influences must be borne in mind before we can approach the question at hand.

You are aware that we have been using a great variety of copper amalgams, all of which have given different results. Copper is a metal very difficult to amalgamate, and there are no less than four different methods of producing amalgamation, each of which produces a different article. Then again, after the copper is amalgamated every manufacturer does not extract the same amount of mercury and also every operator manipulates in a different manner preparatory to filling. The first copper amalgam made in this country was by the mercuric nitrate method and by precipitating with iron zinc. This was often contaminated with other metals. It was coarse, not well amalgamated, often contained twice the necessary amount of mercury and was used with about as much wisdom and discretion as though it were hot mush, and no wonder the cry went up from Brooklyn that there would be a grand howl some day. The use of these different materials in the same mouths would give different results. And to go into the detail of the different materials and the different conditions and influences would require too much time; however, we may consider the effect of perfect amalgamation and its opposite, and the quantity of mercury upon the waste of this material under an alkaline or acid saliva and attrition.

A perfectly amalgamated filling presents as stated in the paper a pure mercury surface to the action of the saliva and attrition. Saliva of an alkaline reaction would have no effect upon mercury, neither would it if it were acid of the strength found in the mouth since mercury is dissolved most easily only by strong nitric acid. The effect of attrition upon such a filling would probably be to dislodge the amalgamated copper particles. But since perfectly amalgamated copper can scarcely be touched by a file this too must be excluded. Therefore, if a perfectly amalgamated copper filling always presents a clean mercury surface it would stand in an acid mouth and under attrition. According to the paper mercury forms a salt in the mouth—the sulphuret—which, as Dr. Ames says, is insoluble, so this would not be affected by the saliva. But if this salt should be easily dislodged there would be a continual reformation at the expense of the filling, and such an one would waste when exposed to attrition. But as stated in the paper this forms a tenacious film. So we must agree with the conclusions arrived at by the author that a perfectly amalgamated copper filling properly used will not waste. If during the finishing of the filling at the second sitting the unamalgamated centres of the copper particles on the surface of the filling are exposed, in an acid saliva these would probably waste by the galvanic solution and the process will stop when these are dissolved; but if in an alkaline saliva, salts would form, these would be removed by attrition again and again until all these exposed particles have been converted into salts and removed.

A poorly amalgamated filling presents copper and mercury areas on the exposed surface of the filling. If the copper has not been fully amalgamated before filling it is hardly probable that it will become so aferwards, so that these two metals will remain separate and subject to the action of the saliva and attrition. On general principles we would exclude an alkaline saliva as having any effect upon copper. But if in an alkaline saliva the two should form salts and these are exposed to attrition it would depend entirely upon how strongly these are attached or whether these are insoluble, whether the filling wasted or not. The copper salts we know can even be removed with a tooth brush so that when such a force as attrition plays upon the filling these salts are sure to be removed, and the repeated loss and reformation of salts at the expense of the filling accounts for their waste in this position. Then the copper salts, and especially the sulphuret, are soluble in water so that they may be dissolved as fast as formed.

When we subject a poorly amalgamated filling to an acid saliva we have a very different result. We have all heard this paper which treated of such conditions. Where formerly the waste of such a filling was supposed to be due to chemical solution by an acid saliva, Dr. Ames explains this very satisfactorily as being due to galvanic solution. It will not be necessary to go into this any further than to add what he possibly intentionally omitted, and that is, that it is not necessary that a fluid be strongly acid to produce galvanism, so a saliva which simply has this reaction is capable of producing the phenomenon. Whereever this local galvanic action is going on the surfaces are fresh, which accounts for the bright appearance and which led to the former belief that it was chemical action rather than galvanic. In receding positions, if these poorly amalgamated surfaces should become protected by the formation of insoluble salts, the galvanic solution ceases at that point.

The proportion of mercury is an important consideration, and especially where the filling is to be subjected to the force of mastication. When the ameliorated copper particles touch one another on all sides and the inequalities are filled with mercury, I think we have the best material, and according as the proportion of the mercury is increased and the copper particles are separated from one another, will the strength be lessened and it will lose substance when exposed to attrition. The first amalgams made contained a large amount of mercury and their waste in exposed positions was largely due to this fact.

It would be interesting to go into the therapeutics of the copper and mercury salts. If it is true as stated in the paper that those fillings which do not waste form mercury salts, what will become of our beautiful theory of the effect of copper salts, unless those of mercury are soluble; for how can an insoluble salt be antiseptic? All these would be interesting, but are not in place here.

The practical points to be derived are these: Poorly amalgamated fillings should not be used in acid mouths, or in alkaline ones when exposed to attrition, but perfectly amalgamated fillings with no excess of mercury and properly manipulated, may be used in all positions and conditions of saliva and not waste.

Dr. J. S. Cassidy, Covington, Ky., attributes the wasting to imperfect amalgamation and perhaps galvanic action, there being no chemical union of the metals entering into the composition of the amalgam.

Dr. E. G. Betty, Cincinnati, suggests finishing such fillings at time of insertion and not to touch them afterward. It has been his experience that if copper amalgam is washed with a nitrate of mercury solution before insertion and the filling subsequently turns black, it will wear well.

Dr. C. M. Wright, Cincinnati, thinks copper amalgam the most uncertain of any of the filling materials that we possess. That while its antiseptic properties are perhaps beneficial, many of the difficulties of manipulation must be corrected to make it a success as a filling material.

Dr. J. Taft, Cincinnati: Does not all the difficulty come from the feeble affinity of the two materials for each other? Is anything to be gained in the use of copper amalgam over ordinary amalgams? The materials in these have a strong affinity for each other while this affinity in copper amalgam is feeble. What more can we expect than the formation of salts and cupping of the filling? Until this affinity can somehow be increased it seems to me of but little value as a filling material.

Dr. W. B. Ames, Chicago, said he never had placed much dependence upon the antiseptic action of copper amalgam, for where there is no waste of the filling, the color of the filling next to the dentine remains light colored, while that in fillings that wash, is dark. Unless the antiseptic salts, indicated by the dark color, are formed we get no antiseptic action; so in fillings that do not waste there would be no antisepsis. He did not think the affinity in copper amalgam was so feeble as Dr. Taft supposes. While the copper is not permeated by mercury it is strongly coated with it and would require more heat than that in the mouth to dislodge the particles.

PHAGOCYTOSIS IN DENTAL LESIONS.*

BY F. W. SAGE, D.D.S., CINCINNATI, O.

It is the object of this paper to review somewhat in detail two papers published in the January number of the *Dental Advertiser*, the titles of which are "Phagocytosis," and "The Mechanism of Infection," respectively, the authors respectively being Dr. Frank W. Low, of Buffalo, N. Y., and Dr. Bouchard, of Paris.

Phagocytosis is fully defined by Dr. Low; without presuming too much on our hearers not having read the article referred to, we venture to present in the briefest terms his definition. A "phagocyte," then, is a cell which possesses the power in a greater or less degree of appropriating and devouring solid particles. He names five tissues in which these phagocytes or amœboid cells abound; as we shall have in this paper to consider more particularly the invasions of the pyogenic microbe, we shall here name one only — the white corpuscles of blood and mucus. Phagocytosis is, then, according to the definition, and for our present purpose, an exhibition (in that interesting phenomenon commonly known as suppuration) of the battle going on between the powers that waste and the forces the tend to prevent waste of tissue. The microbe is the invader seeking to break down and lay waste; the phagocyte is the watch-dog set to destroy the invader.

Notwithstanding Dr. Low's admirable presentation of the details of various experiments made by way of attesting the truth of a theory he advances, he seems to the writer to have fallen short of what he has attempted. He says:

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* Read before the Mississippi Valley Dental Society, held at Cincinnati, March, 1891.

"Where teeth on the one hand remain in the jaw after treatment, they shortly become, apparently, perfectly healthy (a condition that could not obtain so long as pyogenic micro-organisms were present in the tissue); on the other hand, those having been first extracted and then experimentally treated, have almost, if not quite, invariably developed bacteria cultures. Having in mind these facts, but one inference is rationally to be drawn, namely, that the phagocyte cell acts as the factor of elimination, devouring all bacteria, both in the pulp canal and in the tissue about the apex of the root." And then after calling attention to Dr. Miller's assurance of the inadequacy of any and all agents at present employed to effect a perfectly aseptic condition of tooth-roots, and having also directed attention to the success attending the sole use of dry hot air and simple mechanical cleansing of the roots before filling, he adduces the following experiment: An upper molar having putrescent pulp canals, was extracted, suitable precaution being at once taken against the possible ingress of pathogenic microbes, after which the pulp chamber and canals were carefully treated by the "immediate root process" (I quote his words). The roots were then split open and immersed in agar-agar. Almost immediately, the anterior buccal root, which he states *had not been filled*, yielded a colony of cocci. The filled roots however gave no such result.

The writer admits his inability to see that this experiment illustrates the truth of Dr. Low's statement already quoted, that teeth having been *first* extracted and *then* experimentally treated, have almost if not quite, invariably, developed bacteria cultures. The result of the experiment seems to establish the exactly opposite fact. It is, however, a matter of no little moment that if the "immediate treatment process" employed (again I quote his words) was according to the method of using simply dry hot air and mechanical cleansing, to which he referred, the success of that method of procedure seems well enough established.

It is unfortunate that Dr. Low does not explicitly state what he meant by the "immediate treatment process"; still, in view of what he has said of the success of the "dry air and mechanical cleansing process," it seems reasonably safe to assume that he used no medicaments. And yet in view of what we shall presently attempt to consider, it is not essential to our purpose that we should insist on the assumption that he used no medicaments. The result is in any event interesting, as indicating the fact that whatever disturbances may follow the "immediate root filling" process we should direct attention to the apical space.

Dr. Low has distinctly declared that no cultures developed in the two filled roots. Again referring back to his statement that "the phagocyte cell acts as the factor of elimination, devouring all bacteria both in the pulp canal and in the tissues about the apex of the root," we say that the result of his experiment seems to plainly indicate that in the case of the unfilled root this inhibitory action had not taken place. It is not then unreasonable to assume that neither had it taken place in the other two roots so successfully filled.

We point out the significant result of his experiment not in any spirit of cavil: the valuable results incidentally shown—of the "immediate root process"—are of sufficient interest to us, for present consideration, and call for an expression of gratitude to be tendered Dr. Low. It is worthy of passing comment at least, that this single experiment of Dr. Low's seems to refute Dr. Miller's statement that "beyond all doubt none of the agents now employed to bring about a perfectly aseptic condition of tooth roots, are equal to the emergency." The context shows that Dr. Low recognized the full significance of the experiment in this particular respect. It would seem that Dr. Miller did not have in mind dry hot air and mechanical cleansing, if we are right in assuming that upon them alone Dr. Low relied, in his experiment.

We find on following Dr. Low, further on, that he assumes that his readers must regard with incredulity the idea of the phagocyte's penetrating the dentinal tubules, or even the foramen of the pulp canal. Why he should assume such incredulity we are at a loss to understand, unless it be as regards the dentinal tubules only, for it seems to be implied in the quotation which we are about to give, that the phagocyte is capable of reaching any point to which the blood has access. We again quote: "The writer would adventure the opinion that when stasis is complete, the battle goes against the phagocyte, because reinforcements can no longer come to the rescue, while the bacteria proliferate without further hindrance, receiving new colonies with the impactment of each morsel of decomposing vegetable or animal matter that lodges in the cavity of decay."

Leaving at this point the special consideration of Dr. Low's paper, and preserving in mind only the fact which he seems to have demonstrated that roots may be at once rendered aseptic by simple means, we find before us a field for interesting speculation as to what takes place in the "always present abscess"* at the apex of the tooth or beyond that point, after the filling has been inserted. At the risk of rehearsing what is already trite, the writer refers to a time when the most heroic treatment for alveolar abscess was the only kind of treatment to which any reference whatever was made, by at least one author whose work is to-day in the hands of every dental student. That was the total eradication of the abscess by an operation directed through the alveolar wall. About seven years ago the writer of this had suggested to him—through his observation of the result of empirical practice on his own part and on the part of other practitioners—the feasibility and the expedience of filling diseased roots after cleansing and disinfecting merely, and oftentimes without attempt to reach the abscess. That is to say, he discovered that in the cases of individuals of certain temperaments, no unpleasant reaction followed this modified course of treatment. In view of the latest discoveries in bacteriology, it will be seen that this was a leap in the dark. At this day, in the light of recent revelations whereby we are enabled to identify and classify not only the various pathogenic microbes, but also their several foes lying in wait to guard the tissues against their inroads, we seem almost to have reached a stage when it shall be possible to define such hitherto vague terms as diathesis, vital resistive force, and *vis medicatrix natural.* The florid complexion, red hair, bulbous nose, of the individual of an inflammatory diathesis, seems already to suggest something better than the vague term "predisposition"; it calls for the identification of the special microbe producing the specific disease, and at the same time leads us to the naming of the particular phagocyte, the absence of which allows of the proliferation of the mischief-breeding microbe.

It is interesting to recall various small items which a few years ago were significant as *causes* of inflammation, although they fell short of supplying in explicit terms the why and the wherefore of their being causes. There was the "infected broach," which being inserted into the root canal, provoked the quiescent abscess to renewed activity, or, on the assurance that the broach used had been carefully sterilized, irritation was attributed to the forcing through the foramen of effete matter already contained in the root. No one seems to have discovered a solution of what was, after all, a mystery attending this matter, notwithstanding Lister long ago dropped a hint which might have been appropriated by the dental profession, in a suggestion made that the lance should be applied to abscesses in the soft tissues, only after having drawn the integument obliquely aside, so that on its return after being released, the air might be excluded. In view of what Dr. Bouchard has to say regarding the phagocyte and the bactericidal condition, it will not be difficult to account for the fact that the infected broach, in the hands of the most reckless operator, does not invariably excite inflammation. For an explanation of this we refer the author to his admirable paper.

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* Dr. Flagg.

But to return to the inquiry, "What takes place beyond the apex after the roots have been filled?" To discuss this question exhaustively would take more time than the writer feels is properly allotted to him; he will, therefore, call attention to only a few features of what seems reasonably well established. We are continually tempted to turn aside, lured by the curious use of terms in vogue only a decade ago — "laudable pus," "decomposition of pus recurring in secondary inflammation," and so on.

But to resume; the treatment of alveolar abscess in years past has been founded on a principal of reasoning from effect to cause, without an intelligent apprehension of the nature of either the effect or the cause. We argued the necessity of stopping the root canal after a course of treatment, in order to obliterate or do away with a reservoir into which fluids might seep, there to decompose and "react" upon the parts beyond. The condition thus brought about was one in which, in popular parlance, the lymphatics could have an opportunity to control, absorb, or what not, the seeping fluids. In all this there was no recognition of what Dr. Bouchard terms the bactericidal condition, accessory to the aggressive function of that microbe destroyer, the phagocyte. We knew that through the use of medicaments we could induce, sooner or later, a condition in the abscess, of tolerance, which we recognized as a restoration of the balance between the so-called vital resistive force and the disease-breeding agents. But that this was a chemical condition slowly brought about, through which microbes of infection were destroyed, we had no suspicion. We viewed the recurrence of swelling in the gum months and even years after our treatment of roots, noting the absence of pain, but being unable to account for that fact. There the microbes, according to Dr. Bouchard's theory, were again at work, but with weakened functions, owing to the fact of their having to contend with the vaccine elements of other colonies of microbes once occupants of the field. Here again we recall a principle laid down in works on surgery: "that a part once inflamed becomes weakened, inviting a recurrence of inflammation on the slighest exposure to the causes of inflammation." The recurring inflammation may be persistent, but it is of the low grade indicated by the word "chronic." The microbe is persistent, because through the prevention of vascular dilatation, exudation, and diapedesis, the phagocyte is afforded no opportunity to combat him. At the same time, as Dr. Bouchard affirms, the microbe's functions are embarrassed from the fact that while on the one hand it secretes noxious elements favorable to its own development, it also secretes these vaccine elements before referred to, the protective influence of which presently begins to be manifested.

In this desultory way we believe we have gone over the principal ground of research in what most concerns us as dentists, to know, as regards the action of microbes in alveolar abscess at least.

The abscess then, unless extirpated by a heroic operation, usually remains in a quiescent state, subject to the influences of after-inflammation.

Prosthetic Dentistry.

[This department will be devoted exclusively to Prosthetic Dentistry, including Crown and Bridge-Work. We shall be pleased to receive from our readers such practical contributions, short items or queries upon this subject as they choose to contribute.]

NEITHER NEW NOR NECESSARY.

BY PROF. L. P. HASKELL, CHICAGO.

Noticing in several of the dental journals an article entitled "A New Method of Making Dental Dies," I wish to say the method is not new, and so far as Babbitt metal is concerned is unnecessary.

The writer says: "As is well known the Babbitt metal melts at a much lower temperature than lead, and if an attempt is made to pour lead on a Babbitt metal die the two will adhere." Very true, but what is the remedy, certainly not the making of the counter-die first, the result of which is an incorrect die, but, as I have stated over and over again, simply reduce the melting temperature of the lead by adding *one-sixth tin.*

Forty-six years ago my first instruction in making dies was in the use of tin, with lead counter. Of course the counter-die had to be made first somewhat as described in the article referred to as a *new* method.

Mr. Editor:—The statement of A. S. Billings in your March number, that tin added to lead softens it, and such statement being contrary to the well known fact, it *having the contrary* effect, I send you the correction.

My objection to Babbitt's metal is that it being a composite it is uncertain in its repeated meltings.

I find that the harder the model and softer the counter-die, gives the best results in swaging metal plates.

If two hard surfaces with a third one between offering unequal resistance are pressed or hammered together, something must give way, and faulty or rocking plates result.

Soft lead being hammered against the gold or platina plate will force them into every inequality of the rugæ and over the ridge without splitting or tearing. The force given may displace the lead, of which a new one is easily made and the zinc die be intact; but if Babbitt's metal, with a counter-die of tin and lead be used, spreading of both takes place and the denture is imperfect. Let any one take an iridinized 20 karat gold plate and swage and he will soon find which dies are superior. Having used both iridinized gold and platina with tube teeth for over 20 years, I speak from experience. DR. D. GENESE.

MAKING GOLD CAP CROWNS.*

I AM glad to give a most hearty approval of the use of pure gold for crown bands. It is so easy to draw in the edge when too large; to expand it when too small; and to subsequently finish and burnish it into all the inequalities of the root. When so burnished it will be found to possess sufficient rigidity and strength for every purpose. The balance of the operation as described is certainly very ingenious and applicable for denuded teeth, and those worn down and cupped out by mastication, but I do not think it will practically bear comparison with present methods in all instances when it is desirable to reproduce the contour and sulci of cusps. The effect when finished from the hands of a majority of dentists, would be far from artistic; and even of the few who possess ability to produce a passable representation of the occluding surfaces of molars and bicuspids, it would take far more time than another way which is replete—as this is not—with principles of mechanism and easily acquired possibilities for artistic effect. That it presents sufficient material for grinding away is no argument in its favor, for the cusps of gold crowns should always be made solid—never "hollow shells." Besides, if the crown is mechanically constructed, little grinding of the cusps is ever necessary.

Let us suppose that we have made a pure gold band and pressed it to its proper position on a lower molar root. Its height should be nowhere more than one-sixteenth of an inch from occluding teeth.

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* Extract from comment of Dr. C. S. Case, in *Dental Review*, on Dr. Ottolengui's method of Making Gold Cap Crowns Without Dies, published in *Cosmos* Dec., and given in substance in Jan. OHIO JOURNAL.—ED.

Now, by the use of a steel die-plate in which intaglio cusps of teeth have been sunk, cusps of pure or 22k gold can be struck and finished in less time than it takes to describe the method.

Have the gold for this purpose rolled about one-sixteenth of an inch thick, from which cut a piece a little smaller in diameter than the selected intaglio. Strike into place with a smooth-faced hammer and file off surplus even with the face of plate. A slight experience will enable one to start with a piece that will evenly fill the depression with little surplus.

If it is desirable to make the cusps thicker, start with a larger piece of gold and file off overlapping edges. If you wish the cusps smaller or thinner than the selected intaglio, first swage a shell of brass or german silver, to be used as a matrix, of sufficient thickness to produce the proper abridegment.

Some prefer to use thin gold plate, swaged to place with small pieces of lead or bullets, and filled with a lower grade of gold. For this purpose use gold plate alloyed one-fiftieth with platinum and fill with gold as near the color of band as possible, in case it is necessary to cut much from border or cusps.

Lay the cusps thus made upon the band and bring occluding teeth to position. If much cutting of the ferrule is necessary to perfect articulation, it should be filled with plaster-of-Paris or other filling to prevent bending in the process of grinding down. Finally perfect joint on the outside of the mouth, unite the parts and finish.

Another resort for fitting the cusps to the band and one that will afford an opportunity for great precision is as follows: Take bite and a plaster impression of the immediate section, with band in position. When this is filled it should give perfect antagonizing models, with band in exactly the same relative position it occupied in the mouth.

To avoid the possibility of an error in readjusting the band to the plaster impression when it is not drawn from the root, I take the impressions in sections—using two pieces of thick sheet lead about as large as a silver dollar cut in halves, for impression trays. I fill the band with modeling compound and make the sections part from it in such a manner that it may be perfectly adjusted to place before filling.

If the ends of the band have been joined with squared edges and soldered with 22k gold, reduced with equal parts of silver and copper, the cusps may be united to band with a 22k solder which has been reduced with an alloy composed of silver 1, zinc 2 and copper 3, and in a manner that joints cannot be detected when finished.

Since writing the above I have reason to thank Dr. A. E. Matteson for suggesting the following solder for gold crowns. It fuses and flows readily and with no perceptible difference in color.

For soldering bands: pure gold 1 pwt., cadmium 1 gr. For soldering cusps to band: pure gold 1 pwt., cadmium 2 gr.

The gold should be brought to a fused state on a piece of charcoal or in a crucible, and the cadmium suddenly thrust into it one grain at a time.

Before the ferrule is pressed to place preparatory to fitting and joining the cusps it should be contoured with suitable pliers and its upper border drawn in so as to present, when finished, a proper artistic appearance—an effect to be desired when compared to those mechanically constructed gold crowns, one often sees with straight parallel sides. Unfortunately, the market does not present supply the proper tools for this purpose, but if dentists knew how easily they were made from ordinary small flat-nosed pliers, they would soon arm themselves with more perfect implements for the artistic part of the operation. Draw the temper from one nose of the pliers and bend it slightly forward. File the occluding surface of this to any desired shape from a delicate curved lip to a rounded face. Grind a counter-receiving depression in the other lip and polish surfaces. It is not usually necessary to restore the temper as it is to be used only upon thin, soft gold.

TO PREVENT FRACTURES ALONG THE MEDIAN LINE IN VULCANITE PLATES.

"H. T. N." says he has reinforced with gold wire, but without advantage. This is a common error; any wire put in a plate weakens the plate. Let him proceed as follows, which is the plan of Dr. N. W. Kingsley. If gum sections are used, grind up the set to the occlusion, and wax fast to the model. Pour plaster around the labial surfaces of the teeth and model, and when hard remove and keep as a guide for returning the teeth to position, as they are to be removed from the model. Next repeat the operation with plaster and sand, investing the two front blocks. Take all wax from inside of the arch, and remove the front blocks in the investment. Bend a piece of platinum and iridium wire so as to touch the pins of the blocks. With a fine pointed flame and fourteen-carat or eighteen carat solder, fasten the platinum wire to the pins of the blocks, thus uniting the two blocks. Let the solder remain rough if it flows so, as that will assist the attachment of the rubber.

If plain teeth are used, proceed similarly, and unite six front teeth.

The united teeth can now be placed in the plaster guide, and that fitted around the model will restore the teeth to proper position. A plate made in this way will not fracture, nor will the front joint open.

The philosophy is that by securing the keystone of the arch, fracturing is prevented. This is a fact proven by hundreds of successes.—RODRIGUES OTTOLENGUI, *Cosmos.*

MECHANICAL DENTISTRY.

DR. WALTER M. BARTLETT: Mr. President, and members of the St. Louis Dental Society: I must say that I feel very highly honored in being selected to respond to the toast "Mechanical Dentistry," which I regard as the foundation of our profession. Mechanical dentistry is an art in itself, an art which will be chiefly instrumental in bringing our profession to perfection. Members of the profession should look upon this branch of dentistry with respect, but on the contrary, some of our most prominent brethren exhibit contempt for this, refusing to recognize it as a true art, fearing, perchance, that they may be classed with those mechanics who enjoy that most honorable and distinguished title of doctor, but who in reality are only cork leg makers. If we all held this opinion, it would not be long befor the main prop and stay of our profession would give way and the whole structure fall to the ground; for he who looks upon mechanical dentistry with contempt, must look upon all dentistry with the same feeling, for dentistry is mechanical *in toto.* What joy does this special branch bring to the gourmand who has been unable to eat for the want of his lost molars! What joy it also brings to the once beautiful woman who has been made to look ten years older by the loss of her pearly teeth! And what satisfaction it gives to the mothers when they see the irregular teeth of their children brought into proper place by a small contrivance of an adept in this specialty! We must not for a moment think that this branch ends in making a set of teeth, crown or bridge. We must go further and make this art play an important part in all surgical operations relating to dentistry. There is a broad field before us and much room for improvement, and I hope to see the day when the ingenious dentist will be consulted by our practicing surgeons, and his mechanical skill be used to assist in perfecting operations.—*Archives.*

PLATINIZED SILVER FOR DENTAL PLATES.

Silver 4 and platina 1 part, makes a very good alloy for dental plates, it works easily in swaging and can be soldered with 18 karat gold solder.

This alloy is used quite extensively in England, we are told. Dr. Haskell recommends its use by dental students, and certainly it is much preferable to brass or copper for them; its cost is only about one-fourth that of 20 karat gold plate; rubber can be used upon it for attachment, the same as on gold plate.

The alloy does not tarnish in the mouth, which fact is readily recognized when we know that the sulphuretted hydrogen set free in the process of vulcanizing does not effect the plate sufficiently to preclude its use in this way. It is as rigid as 18 karat gold plate, and is especially adapted for partial plates. We hope to see it adopted more extensively in the colleges and in practice; certainly it is worth an impartial trial.—*Archives.*

LABORATORY SOAP.

Save all small pieces of soap that accumulate about the office from the operating room and laboratory, cut into small pieces with a knife, place in a tin vessel, add a little water, pumice stone (powdered) and a very small amount of concentrated lye, boil over a slow fire till all is nearly dissolved or melted, pour out in a vessel for molding, and when cold cut the desired size, and you will have the most desirable laboratory soap any one could wish; it will remove all stains, and with a five cent package of soapine you will have soap for the laboratory sufficient to last a year.—*Dr. J. W. Cormany.*

UNILATERAL ABSORPTION OF THE SUPERIOR MAXILLARY RESULTING FROM PRESSURE.

Mr. J. Browne Mason (Exeter) showed models, and shortly related a case of unilateral absorption of the superior maxilla resulting from pressure. About ten years previously he made an upper and lower denture for a lady whose upper jaw was entirely edentulous. The patient, however, did not trouble to wear the lower plate, as she thought she did not need it; or if she did, it was an incumbrance she preferred to dispense with. In consequence of the unequal pressure produced, absorption of the superior maxilla on one side resulted.—*Dent. Record.*

TO PREVENT DARK JOINTS.

To keep the rubber from running through the joints of gum sections, and making them dark, bevel off the inside corners of the joints a little. Take a few fibers of asbestos, twist them into a thread, and cut it into pieces a little longer than the joints. With a pair of tweezers put them into place and pack them into the joints with a thin knife blade.—J. H. Downie, *Cosmos.*

Compilations.

"Gather up the Fragments."

HYDROGEN DIOXIDE; A RÉSUMÉ.*

BY JOHN AULDE, M.D., PHILADELPHIA, PA.

Within the past ten years the use of hydrogen dioxide (peroxide of hydrogen) has become quite general among practitioners whose business has led them to give specal attention to some particular class of disorders. Many general practitioners, however, have not availed themselves of the benefits afforded by this comparatively recent addition to our therapeutic resources, owing to the expense and the care required in looking after details, together with the uncertainty which attended its employment. These difficulties no longer exist; but, when we consider the advantages to be gained from its use, the process of evolution has been remarkably slow, notwithstanding the sporadic attempts which have been made to attract the attention of the medical profession. Novel methods of treatment are too frequently shunned without investigation by regular physicians, while, on the contrary, these innovations are readily adapted to the wants of the quack.

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* Extract from a paper published in N. Y. *Med. Jour.*

In the present instance, although the *furore* for antiseptics continues unabated, the true position of oxygen has been ignored by those who should have given it their first attention. Long-continued and persistent effort has erected an imposing superstructure upon a theoretical foundation, losing sight of the marvelous influences constantly at work in nature. The cornerstone of this ornate edifice originally adopted was carbolic acid; the pilasters which gave strength and beauty to its walls were composed of carbolated gauze, while cornice and roof were made of protective which had been submitted to a carbolizing process. This highly flavored substance has given place to a number of others, some of which are safer, but no more useful; others are more efficient than carbolic acid, but, as usually employed, are far more dangerous. As the foundation for asepsis rests upon absolute cleanliness, so the foundation for antisepsis must rest upon an equally safe basis as regards the patient. The only agent known at the present time which fully meets our requirements is oxygen in some of its forms. While the spores of anthrax bacilli resist our most poisonous products—such as solutions of hydrochloric acid (two per cent.), boric and salicylic acids in concentrated solutions—oxygenated water alone, in sufficient quantity, was shown by Paul Bert and Regnard to possess the power of destroying the bacteria.

The wonderful properties of ozone are but partly understood; like some other powerful agents, it cannot be safely handled, but it gives great promise of usefulness in the future. The statement has been made that ozone is but an allotropic form of oxygen, and that it is identical with hydrogen dioxide (the subject of the present article), and for all practical purposes, from a therapeutic standpoint, they may be considered substantially the same. Having, then, at our command a remedy possessing such remarkable properties as a bactericide, one which is perfectly harmless when brought into contact with healthy tissues, it will be worth while to study the indications for its use in the treatment of disease. In the first place, however, I should say a word with reference to the causes which have contributed to prevent its universal employment by physicians—causes already referred to incidentally.

1. *The expense* of an outfit and material for administration of this agent need not exceed five dollars or sufficient to cover a period of from six weeks to two months. The medicinal peroxide can be purchased in orginal packeges at about the cost of filling a prescription at a first-class drug store. An atomizer and vaporizer combined, especially required for this substance, costs no more than one equally complete for ordinary use.

2. *The inconveniences* attending the exhibition of hydrogen dioxide, by means of the vapor or spray, are purely imaginary. The use of these instruments by patients requires but little manual dexterity, and the instructions in regard to inhalations may be comprehended by the merest tyro. Children rather enjoy the mechanical features of the apparatus with the novel phenomenon of having the vapor expelled through the nostrils.

3. *The uncertainty* following the employment of the peroxide has arisen from various causes, and, as this is a subject of paramount importance, the items will be considered in detail In the pure state hydrogen peroxide is exceeding unstable, and, in order to render it less susceptible to the action of heat, which causes it to part with nascent oxygen rapidly, minute quantities of hydrochloric and phosphoric acids are added to the usual fifteen-volume solution ; but this, instead of retarding, rather heightens the effect of the remedy when applied to unhealthy structures, especially mucous surfaces. When the container is allowed to remain in a warm room, or when it is not properly stoppered, the activity of the preparation is materially lessened, if not entirely lost. An excess of acid is objectionable, however, as it renders the peroxide irritating instead of soothing.

Commercial peroxide, which is used extensively for bleaching purposes and in the arts, is doubtless responsible for unsatisfactory results, but, as compared with the medicinal preparation, it is a very inferior product, sold at a cost of about eight cents a pound. Physicians should know that this product always contains a large proportion of acids (two to five per cent.), hydrofluoric, sulphuric, hydrochloric, oxalic, and nitric acids, and, knowing this to be the case, they should be careful to examine the reactions and see that the medicinal preparation obtained by patients is supplied in original packages. The commercial product is not "just as good" nor will it "do as well" for the patient; and if these suggestions are kept in view, the success of the peroxide is assured.

Another important thing which I have learned is, that the mixture of the peroxide with glycerine does not make "glycozone," but, instead, a mixture which generates slowly but constantly secondary products, which appear to possess irritating properties almost as toxic as those of formic acid, well known in Central Africa as a deadly arrow-poison. I am of the opinion also that when the peroxide is used in the form of an inhalation by heating with water, a considerable proportion of the nascent oxygen is transformed into ordinary oxygen before reaching the affected tissues, and while I can readily understand how this must detract from its efficiency, remarkably prompt results have attended its administration in this manner. The only obstacle in the way of securing immediate and favorable results from the exhibition of this agent is our inability to command at all times a freshly prepared and thoroughly reliable product, free from the impurities incident to its manufacture; but that difficulty, I believe, is no longer an excuse, as it can be supplied by the principal druggists throughout the country.

Therapeutics.—From the peroxide of hydrogen we may obtain, in the form of a vapor or spray, the therapeutic effects of nascent oxygen, and as a surgical application or antibacterial substance this product is far superior to the gas itself. Used in the form of a vapor by inhalation, it increases the secondary assimilation by favoring the elimination of excrementatious products through the stimulating effect upon internal respiration. Just as pure mountain air arouses the activity of functions which have been depressed and promotes health, so oxygen evolved in this manner increases tissue change and prevents the suboxidation which attends upon the arrest of cell function. Oxygen is a tissue-builder as well as an oxidizer of carbonaceous and excrementitious products. When it is introduced into the alimentary tract, abdominal fermentations are arrested by the destruction of the germs which produce them; unhealthy mucous secretions are destroyed, while the vitality of the cells lining the walls of the intestine is augmented, and their power against the absorption of ptomaines and leucomaines greatly increased. The surgeon will find the peroxide an efficient and most convenient antiseptic, as it can be freely used in cavities, in discharging sinuses, and upon the most delicate tissues, without danger of producing the slightest irritation. In all cases of threatened collapse, in low conditions of the system, and during convalescence from severe illness, the physician should bear in mind the wonderful revitalizing properties of this remedy. Perhaps the reader will gain a more practical idea of the application by a reference to some of the more prominent indications, and I shall briefly pass in review some of the diseases in which it may be used with beneficial results.

The peroxide should be used in all forms of *indigestion*, more especially when the stomach is weak and depressed to such an extent that the usual antiseptics are not well tolerated. Those who use it once for the relief of indigestion, gastritis, gastralgia, and for the arrest of fermentation or an abnormal flow of mucus, will have no cause to regret the selection. A large number of *cutaneous affections* are dependent upon an unhealthy condition of the alimentary tract, such as urticaria, eczema, etc., and, of course, are benefited by the use of the peroxide. It is used with good effect also in the treatment of anæmia and chlorosis, erysipelas, septicæmia, lithæmia, rheumatism, diabetis mellitis, diarrhœa, catarrh, diphtheria, phthisis, etc., etc.

In *surgical practice*, when the solution of the proper strength is brought into contact with diseased tissues, a brisk effervescence takes place and continues until all the pus corpuscles present are destroyed. This solution may be used topically in nearly all cases of catarrh of the upper air passages in the form of a spray, and it may be used as an antiseptic after the removal of pus in *empyema*. The substance possesses the advantage over other antiseptics of being harmless, and can therefore be used freely in *diphtheria* and *croup*. There are so many indications for its employment that it would be difficult to mention all the *topical uses*, although the following may be referred to, viz., boils, carbuncles, indolent ulcers, carcinoma, and venereal diseases as an injection.

The most flattering commendations of "Marchand's peroxide of hydrogen (medicinal)" have been given voluntarily by numerous well-known authors and contributors to medical literature within the past few years, some of whom may be mentioned as additional evidence that the methods here recommended are worthy of further investigation: Dr. W. B. Clake, of Indianapolis, Ind.; Dr. George B. Hope, Surgeon to the Metropolitan Throat Hospital, New York; Dr. J. Mount Bleyer, of New York; Dr. Robert T. Morris, of New York; Dr. Paul Gibier, Director of the New York Pasteur Institute; Dr. R. Charest, of St. Cloud, Minn.; Dr. E. R. Squibb, of Brooklyn, N. Y.; and others whose names cannot now be recalled. Dr. Morris refers to it as "the necessary peroxide of hydrogen," and I have found Marchand's product to possess in a remarkable degree the properties so essential to success—viz., uniformity in strength, purity, and stability.

Correspondence.

"I charge you that this epistle be read."

DR. PEIRCE AND ANTISEPSIS.

EDITOR OF OHIO JOURNAL OF DENTAL SCIENCE:

MY DEAR EDITOR,—It is not very often my name appears in print, but when it does I do not like to see it appropriating thunder belonging to some "other fellow." In Dr. J. W. Jungman's article on Antiseptics, March number, page 127, I find the following: "Dr. C. N. Peirce recommends iodoform ground up with equal parts of oil of cloves and oil of eucalyptus, which forms a substance of a soft cheesy consistency, a portion of which can be introduced to an inflamed part on the point of a small broach." Now while I have no doubt of the efficiency of this remedy for this purpose recommended, it is not the formula suggested by me. What I have used with great satisfaction and recommended to others is equal parts of oil of cinnamon, oil of cloves, carbolic acid, and iodine. In this combination iodoform will readily dissolve, so of this last material I add quantity sufficient to make a mass of thick creamy consistency which is very smooth and easily applied to pockets, cavities and canals where a disinfectant is indicated. The above formula I have used for years with satisfactory results in "pyorrhœa alveolaris" and other local inflammatory conditions. In this combination the odor of the iodoform is suppressed to a minimum condition so that my patients will tolerate it without a word of complaint. I hear a dozen of your readers exclaim at once, "Why this mixture when you can have at hand one equally good in *aristol* and oil of cinnamon." This is a very pertinent inquiry and one which I am now solving by daily use of the latter in place of the former and with results most encouraging. I make no criticism on Dr. Jungman for the trifling error herein corrected, for I have noticed its publication in other papers besides the admirable one in question, but felt that I was getting credit for a formula which should be placed to the account of some one else.

PHILADELPHIA, March 14, 1891. C. N. PEIRCE.

Editors' Specials.

"Write the Vision and make it plain."

A PLEASANT SURPRISE.

ACCORDING to the course of human events, and in obedience to the flight of time, it came to pass, on last Saturday, that the senior editor of the OHIO JOURNAL was just a year older than he had been twelve months before. A event seldom occurs without others following it; and this was no exception to the rule. For on that identical day, above all the days in the year, the following professional gentleman personally reported their individuality into the presence of "Yours Truly." And when we name them you cannot fail to recognize them as *Ours Truly.* Their names are as follows: Drs. J. Taft, Leslie, Heise, Will Taft, Betty, of Cincinnati; Patrick, of Belleville, Ill., and Custer, of Dayton.

The good Mississippi Valley Association had adjourned, and these good brothers came to see us. Some of them had promised long ago to come, and we were glad they came at last. It was better late than never. We were suffering more from professional loneliness than ever before, and did not feel that we could endure it much longer. But we are greatly surprised that we are so much refreshed by this visit of these brethren. Indeed, so few dentists had called on us recently that, at times, we almost forgot that we had ever been a dentist. Not that we complain, for we have so little life and animation that dentists cannot *enjoy*, but simply *endure* our presence. But all the more do we enjoy their endurance. We are glad when we know that they even think of us; how much more when they call in person.

If able to say something kind and pleasant, we'd say it. We read of "joy *unutterable*." We have a severe attack of it now, and are totally helpless. Some things have to be left unsaid. The reader will please imagine the things we are trying to say. So be it.

LA GRIPPE.

This coughing, wheezing disease is again epidemic, or, perhaps it has not been otherwise lately. It was a standing, perhaps a traveling joke, when it first appeared. It is a peculiar ailment—does not kill many outright, but in the language of holy writ, it rather "wears out the saints," and the sinners too, perhaps, for it appears to be no respector of persons.

And now we are threatened with an epidemic of dental colleges. There seems to be no cure but starvation in this case. A new microbicide is wanted. Immortality awaits the man that discovers it. Greater efficiency to the colleges we have would be wiser than greatly increasing their number. But men are naturally cautious against becoming too wise. So we await results.

What We See and Hear.

[We are always pleased to receive short, practical articles for this department, and invite any to send brief descriptions of such appliances, devices, methods, remedies, etc., as will be of interest to the profession.]

When soft gold is used in forming the base of proximal fillings, be sure it is placed in position as a solid mass, to avoid the defective margins so often found in this class of work.—*Archives.*

Countour Work.—Countour fillings are artistic and are allowable when not carried beyond certain limits. Mechanical principles are against the practice, therefore contouring should not be carried to an unsafe limit mechanically.—Dr. Allport, *Review.*

Treatment of Impinging Third Molars.—Dr. Williams says: When the wisdom teeth impinge upon the second molar, grind with the diamond disk between them, then pack cotton into the space so that the tooth as it grows will have a chance to slide up.

Anæsthesia in Small Operations.—For this purpose Dr. A. Dobisch, of Zwittau, recommends spraying the parts for one minute with the following: Chloroform, 10; ether, 15; menthol, 1. This produces complete anæsthesia of the skin lasting from two to six minutes.—*Jour. Am. Med. Asso.*

Dangers of Hypnotism.—Hypnotism is apt to be a dangerous mental poison, and as such it needs to be fenced round with as many restrictions as the traffic in other kinds of poison. Narcotics of any kind are not to be handled by the ignorant, and are liable to reckless abuse by the feeble in mind or body.—*Brit. Med. Jour.*

Over-Filling.—In the use of gold, do not "*over-fill*" the cavity, so that when the finish is given to the filling, the surface is imperfect. Fill the cavity only just full enough to allow properly smoothing the surface. In the use of files, strips, wheels, burs or disks, be careful not to reduce the enamel edge, where you imagine you are only cutting the gold. This over-finish is the cause of many in otherwise good fillings being rendered worthless.—*Archives.*

Cement which Resists Acids.—Melt together carefully one part of caoutchouch (India-rubber) with two parts of linseed oil, and gradually incorporate with it three parts of white bole, so as to form a plastic mass. This cement is not at all attacked by hydrochloric, and but very little by nitric acid. When heated it softens but very little. It does not easily dry upon the surface. If this cement is mixed with one-fifth of its weight of litharge or minium, it dries up in the course of time, and becomes hard. This is known as Benicke's cement.—*New Remedies.*

Complimentary.—The profession in America has never received a higher compliment than that given by the distinguised president of the late International Congress—Prof.

Virchow—when he said: "The American medical world to-day excels in surgery, midwifery and dentistry. What the Germans know about dentistry they learned from America." American oculists also shared his praise.

After this it will be more amusing than ever to see the medical snob assuming airs because he has seen Europe.—*Tex. Cour.-Rec.*

Peroxide of Hydrogen to Arrest Hemorrhage after Tooth Extraction.—Mr. Bennett mentions peroxide of hydrogen as a remedy for hemorrhage. From time to time it was necessary to inject it up sinuses, and if in inserting a probe slight hemorrhage was caused, the instant the peroxide was introduced, bubbles were given off and the hemorrhage stopped. Having noticed this he had used a twenty per cent. solution for arresting hemorrhage, with the result that the blood was staunched immediately. —*Dent. Record.*

[When buying peroxide of hydrogen it is very important to secure a reliable preparation that is fresh and free from impurities. Marchand's is the most reliable.—Ed.]

Mouth-Wash for Stomatitis.—David uses the following mixture as a tonic and antiseptic mouth-wash:

℞ Thymol, 7 grains;
Borax, 15 "
Water, 1½ ounces.

A few drops of this are to be placed in a wineglassful of water, and the mouth rinsed with it. In cases in which the breath is fœtid, owing to deposits about the tonsils and gums, the following wash is said to be serviceable:

℞ Borate of sodium, 15 grains;
Alcohol, ½ drachm;
Water, 1 pint;
Thymol, 7 grains.

—*Med. News.*

Brief Mention.—Undercuts. In the preparation of cavities for filling, do not sacrifice tooth-structure where there are deep undercuts. Use cement or soft gold to fill them, and the tooth will be in better condition to resist future decay.

Where it is impossible to exclude moisture from the cavity during filling, wipe the cavity with creosote, and force the filling in position, being sure there is good anchorage. Work of this kind, well done, will last a life-time.

Condense the Gold.—The reason so many dentists complain of gold flaking, and pitting, is that it has not been sufficiently well packed. Every piece of gold should be perfectly condensed, from the start to the finish of a filling.

Gold in Children's Teeth.—When the tooth structure is good, and the patient will permit it, soft gold properly inserted in the permanent teeth of children, will give more satisfaction to the dentist and patient than any known filling material.—*Archives.*

Dentist's Moulding Wax.—Dr. P. David communicates to the *Journal de Pharmacie et de Chimie* an analysis of the composition known as "Godiva," or "Stent." Upon this he bases the following formula:

Stearin - - - - -	25 parts.
Half-soft copal - - -	25 "
Talc - - - - -	50 "
Carmine - - - -	0.5 "

Oil of rose geranium, 2 drops to the ounce.

Melt the resin by the heat of a sand bath, and when slightly cooled add the stearin, stirring constantly. When this has melted add the other ingredients, previously intimately mixed, and stir so that a homogeneous product may be obtained.

The adhesiveness of the composition may be increased or diminished by modification of the amount of copal. A more thorough blending of the color may be insured by dissolving the carmine in a little potash solution before mixing with the chalk.

Broken Drill or Post Removal.—The difficulty of removing from a tooth-root the broken-off head of a drill, or of a tooth-crown pivot or post, has been experienced by every dentist in the course of any considerable practice. In some such cases I have had gratifying success through the use of an engine trephine like that of the Walker-Younger, No. 1 size. In operation the broken object enters the tube of the trephine, the narrow teeth of which cut a groove around the object, which is thus loosened and may be readily removed. Special trephines of three or four closely graded sizes and tubes of about half an inch deep would be requisite for ready and efficient use, and in some cases the diamond-charged copper trephines of Dr. Weagant (made for inlay work) might be necessary. I have also employed sections of thin metal tubing for forcing over the post to withdraw it when the trephine had not cut around it quite to the inner end of the post.

It is obvious that the trephine avoids the risk of running an ordinary drill along one side of the obstruction, and possibly out through the side of the root, besides preventing the formation of a one-sided or oblique hole in the root. With these advantages in favor of the trephine, the cost of a set for this purpose should not hinder their being kept at hand for these not infrequent emergencies in a large practice.—B. Q. STEVENS, *Cosmos*.

THE BEST METHOD OF REGULATING LIGHT.—First, no matter whether the light comes from the east, west, north or south, it must come from the sky, that is, not through tree tops, climbing vines, or by reflection from a building across the street. Second, it must be excluded at the bottom of the window by a dark screen or curtain, so that the light will strike the person in the operating chair two or three inches below the chin. Third, the chair must be so placed that the operator will not cast his own shadow on the work being done, nor must he allow the assistant to so stand as to exclude the light. Fourth, if there are other windows to the left or right of the operator they must be curtained, so that no cross lights will affect the eye. Fifth, the instrument case must be of dark wood and the bracket table should have no mirrors on the sides, nor should there be a mirror, or other silver, gilt, or dazzling object at either side of the window to reflect light in the operator's eyes, unless it be directed on the patient's face. Sixth, Dr. Gilmer, of Chicago, suggests that the towel or napkin which is spread over the patient's clothing below the chin should be of some dark material, maroon, brown or black. Dr. Cushing adds that the walls of the room should be painted or papered dark brown or black, without any gilt. Dr. Gardiner adds that the temperature of the room should not be above 66 to 68 degrees Fah. in winter, which is an excellent suggestion. Finally, if the eye must rest on something pleasant from time to time, a dark vase filled with flowers, or plants in pots that are painted black, or pictures with dark wooden frames may be disposed about the room with profit.—ED. *Dent. Review*.

Differential Diagnosis of Dental Pain.—(*For simplicity the two kinds of pain may be called "Nerve pain" and "Pericemental pain."*)

Nerve Pain.	Pericemental Pain.
Arises suddenly.	Arises gradually.
Terminates suddenly.	Terminates gradually.
Is not continuous.	Is continuous.
Is chiefly non-localized.	Is distinctly localized.
⁂ Much neuralgia.	⁂ No neuralgia.
Tooth always sensitive to thermal changes.	Tooth not sensitive to thermal changes.
Percussion or pressure does not necessarily cause pain.	Percussion or pressure causes much pain.
Tooth not raised, not loosened.	Tooth raised and loosened.
Tissues around not inflamed, not tender on pressure over root.	Tissues around inflamed, tender on pressure over root, in chronic cases tissues thickened.

In using this table it must always be borne in mind that the two conditions of pulp inflammation and pericemental inflammation may co-exist either in the same tooth or in different teeth; and then the relative importance of the two inflammations will be determined by the relative severity of the two sets of symptoms and sometimes by the history. For instance, if the two kinds of inflammation have been brought on by severe malleting in inserting a gold filling in a tooth, the nerve of which was not nearly exposed, the history will show that the pericementitis was the first lesion and the pulpitis was communicated secondarily.—Dr. H. Baldwin, *Jour. Brit. Dent. Asso.*

Criminals Detected by the Teeth.—In No. 19 of the same journal two curious instances are given of the way in which the teeth may lead to the detection of criminals. The first is rather a curious case. A woman, who represented herself as the wife of a dental mechanic in Potsdam, managed to obtain from a sergeant the price of an artificial denture, by this misrepresentation and by saying that this dentist would be glad to have this denture (which had been ordered by a lieutenant) paid for in advance. The woman managed to elude detection, until one day this sergeant's wife visited the weekly market. At one of the stalls she noticed an elegantly attired lady purchasing goods and endeavoring to persuade the man to send them home to a certain address. The sergeant's wife immediately recognized this lady as the woman who had tricked her husband and this by reason of the thief having only one tooth, which had struck her as rather peculiar in the wife of a dentist. To cut a long story short, the "lady" is now safely under lock and key. The second case, is one in which a woman had murdered a boy 14 years of age. The body was found to be covered with wounds and in one place had been bitten. The damning evidence was the fact that the bite exactly corresponded with the teeth of the accused, especially marked was the impression of a characteristic gap in the dental arch.—*Brit. Jour.*

Unfinished Fillings.—If there is one thing more than another that will create prejudice or lack of faith in dentistry as a whole, it is the failure of gold fillings, whether they be of short or long life; and I believe that the cause of a vast number of the failures is due to the unfinished conditions of the fillings. I have recently had the opportunity of seeing work done by men of good repute, and to first appearance we would say the work is good, and if they had used the polishing strips or disks a little longer all would be well; but on close inspection we find in some cases a slight overlap, and in other cases a very considerable overlap. Now, we all know the consequences that must be verified sooner or later, and I will only say that they will peel or scale off, and when that has begun, then the filling becomes unsightly and defective. I know this is an old story to those who have been long in the profession, but even some of you will become careless, tired, in a hurry to get through, and leave a grand good filling, all but this—unfinished. And if this brief suggestion does not fit your case, all right. But there are a goodly number of young men who no doubt have had this same point pounded into them from the lecture stand from time to time this past winter, and I know by experience that the same point coming from an outsider, sometimes impresses more than it would in the lecture-room. So I repeat for the young man who is soon to leave the college to be his own *boss* to take for his motto, "*Finished with my best effort*," and I will predict that if you have this in mind with every filling you make, you will be a successful operator.—Dr. Entsminger, *Archives.*

Death through Swallowing a False Tooth.—Mr. Weekes (deputy coroner) held an inquest at Moor Street, Birmingham, on the 3rd inst., upon the body of Fanny Barrett, aged twenty-eight, whose parents live at 3 Court, Vauxhall Road.—Deceased was employed as a domestic servant at the Anchor Tavern, Lawley Street, and on the 4th of August, whilst taking a drink of water, swallowed a false tooth. She told her mistress, who advised her to go to the General Hospital, and accordingly she and her mother went to that institution. She was subsequently seen, however, by Dr. Darlington, who examined her, and came to the conclusion that the tooth and plate were lodged in the œsophagus. He communicated with Dr. Jolly, and deceased was once more taken into the hospital. Her symptoms were very obscure, and it was impossible to determine whether the tooth was really lodged in her body at all, it being thought that she might be suffering some disease of the stomach. The symptoms, in fact, were so doubtful that the doctors did not feel warranted in performing a dangerous operation. She was allowed to leave the institution, and although she complained at times of pains in her back and side, she was soon able to resume her duties as a servant, and apparently enjoyed good health.

On Friday morning, however, she was suddenly taken ill, and vomited a large quantity of blood. Dr. Darlington was called in, but death occurred the same day from syncope. A post-mortem examination was made by the doctor, who found the tooth and plate situated at the bottom of the œsophagus, near the entrance to the stomach. The plate, which was formed of vulcanite, had perforated the walls of the œsophagus with the result that the one end had injured the lung substance and the other had penetrated the aorta, causing the hemorrhage previously spoken of.—In answer to questions from the Deputy Coroner, Dr. Darlington stated that the plate of the tooth was smaller than was usually the case, and therefore the suction power would be rather defective. He also remarked that it was an extremely rare occurrence for a tooth to get loose in waking hours.—The mother was recalled, and stated that the deceased had had the tooth five years and that she bought it from a dentist in Corporation Street for 7s. 6d.—The Deputy Coroner, in summing up, said that it was a warning to people not to buy cheap false teeth, and so suggested that their verdict should have reference to cheap dentistry.—The jury returned a verdict of "Accidental death," but refused to add a rider, a course which led the Deputy Coroner to remark, "Perhaps there are some dentists among you, gentlemen."—*Brit. Jour.*

Societies.

"Wherewith one may edify another."

MEETINGS.

Alabama Dental Association meets annually. Next meeting at Anniston, on the second Tuesday of April, 1891.

Illinois State Dental Society meets at Bloomington, second Tuesday in May, 1891.

Iowa State Dental Society meets annually. Next meeting in Sioux City, on the first Tuesday in May, 1891.

Southern Minnesota Dental Society. Next meeting in Mankato, third Tuesday in April, 1891.

NORTHERN OHIO DENTAL ASSOCIATION.

The forty-second annual meeting of this body will be held at Oberlin, O., in the Y. M. C. A. Building, Tuesday, May 12th, 1891, at 10 o'clock A. M., continuing three days. A very interesting program has been prepared, embracing the following subjects, viz.:

"Development of the Teeth," paper by Dr. W. H. Whitslar, of Youngstown, discussion opened by Dr. A. J. Dowds, of Canton; second, "The Recurrence of Decay in Teeth," paper by Dr. J. G. Templeton, of Pittsburg, Pa.; third, paper by Dr. W. H. Atkinson, New York, subject, "Hind Sight," discussion opened by Drs. C. R. Butler, Cleveland, and E. J. Waye, Sandusky; fourth, "Sanitary Condition of the Mouth, and How Best to Maintain It," paper by Dr. J. F. Dougherty, of Canton, discussion opened by Dr. W. T. Jackman, of Cleveland, and Dr. J. H. Wible, of Canton; there will also be presented a number of voluntary papers, incidents of office practice, and several clinics, among which are the following: "A Tin Filling with Gold Facing," by Dr. S. B. Dewey, Cleveland; second, "Electricity Supplemented with a paper," by Dr. Frank Creger, Fremont, O.; third, "Melting an Ingot of Amalgam," followed by a talk on the same, by Dr. J. F. Siddall, Oberlin, O.

This promises to be an unusually interesting meeting and we hope that all the dentists who can will make arrangements to attend and carry with them any new appliances, devices, models of interesting cases, or report of some case in practice.

Any desired information may be had by addressing Dr. Henry Barnes, 106 Euclid Ave., Cleveland, O.

MISSISSIPPI VALLEY DENTAL ASSOCIATION.

The officers elected for the ensuing year are as follows: President, Dr. L. E. Custer, Dayton, O.; 1st Vice-President Dr. O. N. Heise, Cincinnati, O.; 2nd Vice-President, Dr. Mrs. Jessia Dillon, Cincinnati, O.; Rec. Secretary, Dr. H. T. Smith, Cincinnati, O.; Cor. Secretary, Dr. H. C. Matlack, Cincinnati, O.; Treasurer, Dr. Frank Hunter, Cincinnati, O.

AMERICAN DENTAL ASSOCIATION.

The Executive Committee have decided on Saratoga Springs as next place of meeting of the American Dental Association, commencing first Tuesday in August, 1891.

It is hoped by the committee that each society will send delegates that we may have a full representation from all parts of the United States.

Program and arrangements to be announced later.

Chicago, March 12, 1891. J. N. Crouse, *Ch. Ex. Com.*

ILLINOIS STATE DENTAL SOCIETY.

The following programme is arranged for the Illinois State Dental Society, to meet at Bloomington, May 12, 13, 14 and 15, 1891:

1. Annual Address, by the President, Dr. Truman W. Brophy, of Chicago.
2. Report of the Committee on Dental Science and Literature, by Dr. J. D. Moody, of Mendota, chairman.
3. Report of the Committee on Dental Art and Mechanism, by Dr. W. B. Ames, of Chicago, chairman.

4. How to Deal with the Condemned pulp, by Dr. J. G. Dickson, of Carmi. Discussion to be opened by Dr. J. G. Reid, of Chicago.

5. The Preparation of Teeth for Filling, by Dr. Edmund Noyes, of Chicago. Discussion to be opened by Dr. Geo. H. Cushing, of Chicago.

6. Prosthetic Dentistry, by Dr. W. T. Magill, of Rock Island. Discussion to be opened by Dr. E. C. Stone, of Galesburg.

7. Third Period in the History of Dentistry, continued with Biographical Notes, by Dr. John J. R. Patrick, of Belleville.

8. Experimental Studies in the Action of Diffusible Medicinal Agents in Living and Pulpless Teeth, by Dr. A. W. Harlan, of Chicago. Discussion to be opened by Dr. P. J. Kester, Chicago.

9. Architecture of the First Upper Molar, by Dr. Alton H. Thompson, of Topeka, Kan. Discussion to be opened by Dr. A. B. Truman, of Chicago.

10. A Lantern View of the Pulp Chambers and Canals, showing Typical Forms and Variations, by Dr. D. M. Cattell, of Chicago. Discussion to be opened by Dr. G. V. Black, of Jacksonville.

11. Efficiency and Simplicity in Regulating Appliances, by Dr. E. H. Angle, Minneapolis, Minn.; illustrated by stereoptican. Discussion to be opened by Dr. C. S. Case, Jackson, Mich.

12. Low Fusing Continuous-Gum Body, by Dr. George Cunningham, of Cambridge, Eng. Discussion to be opened by Dr. W. B. Ames, Chicago.

13. Report of Supervisor of Clinics, by Dr. Louis Ottofy, of Chicago, chairman, with discussion.

CLINICS.

Dr. W. O. Kulp, Davenport, Iowa, Art Technique.

Dr. I. P. Wilson, Burlington, Iowa, Root Filling.

Dr. R. H. Mase, Belleville, Ill., Gold Crown.

Dr. W. H. Taggart, Freeport, Ill., Filling at the Cervical Border, using extension arm cervex clamp; also a new Suspension Removable Bridge.

Dr. W. B. Ames will demonstate Dr. Cunningham's Low Fusing Body for Continuous-Gum.

Dr. Edgar Palmer, of LaCrosse, Wis., administration of Narcotic Vapors, using valved inhalers.

Dr. A. O. Hunt, Iowa City, Iowa, a New Bridge.

Dr. E. E. Hughes, Des Moines, Iowa, Gold Inlay.

Dr. Geo. H. Slyfield, Waukegon, Ill., Contour Gold Filling.

Dr. K. B. Davis, Springfield, Ill., Artificial Crown.

Dr. S. F. Duncan, Joliet, Ill., Method of Striking up Crown Tips.

It is particularly requested that those having pathological specimens, peculiar cases, models, new appliances and methods will bring them to the meeting.

All practitioners of Illinois (including non-members) and of other States are cordially invited to attend. They are especially urged to be present at the opening day and to remain through to the last session.

The usual reduction in hotel rates and railroad fares will be allowed.

J. W. Wassall, *Ch. Ex. Com.*

OHIO COLLEGE OF DENTAL SURGERY.

The forty-fifth annual commencement of the Ohio College of Dental Surgery, Department of Dentistry, University of Cincinnati, was held at the Scottish Rite Cathedral, Wednesday evening, March 11, 1891.

The programme was as follows:

Music—Orchestra.

Prayer.

Conferring of Degrees and Address—D. W. Clancey, M.D., D.D.S., Vice-President of the Board of Trustees.

Music.

Awarding of Prizes—Prof. H. A. Smith, Dean of the Faculty.

Music.

Valedictory—Prof. J. S. Cassidy, M.D., D.D.S.

Music.

Class Oration—H. Stewart Gilson.

The first prize, a gold medal for the best general examination, was awarded F. R. Chapman, Ohio. The second, a gold medal for the best work in operative dentistry, and also the third for the best work in mechanical dentistry, were awarded E. A. Mehaffey, Texas.

The graduates were as follows: E. J. Abeles, O.; B. E. Ashby, Ky.; T. Barrett, Mo.; A. H. Boyd, Tenn.; W. A. Burnett, O.; J. W. Buzzerd, O.; C. H. Campbell, O.; C. E. Case, Ind.; J. B. Chaffee, Mo.; F. R. Chapman, O.; J. M. Chase, O.; Mrs. F. Cooper, Ky.; H. B. Copsey, Cal.; D. D. Cornell, Ia.; B. B. Cory, Cal.; W. McA. Coryell, Ind.; E. P. Cunningham, Jr., O.; H. C. Davidson, O.; G. W. DeCamp, Jr., O.; W. H. Ervin, Ind.; F. E. Favret, O.; J. C. Foulk, O.; T. W. Freeman, Can.; L. B. Furman, Pa.; C. H. Geiger, O.; J. W. Gercken, O.; H. S. Gilson, Pa.; E. C. Grant, O.; J. H. Hines, O.; A. Howe, Minn.; C. W. Hubbell, O.; E. E. Israel, Ind.; J. W. Jackson, O.; H. J. Johnson, O.; L. H. Knapp, N. Y.; A. A. Kumler, O.; C. V. Lanum, O.; W. S. Leeds, Ind.; W. S. Locke, O.; J. F. Lockhart, M.D., Ky.; L. A. Long, Pa.; C. V. Mallory, O.; J. W. McAbee, Cal.; F. M. McCarty, Ind.; W. O. McGaughy, Miss.; E. A. Mehaffey, Tex.; E. C. Meyer, Ind.; G. M. Miller, Can.; J. V. Miller, Wis.; E. C. Moore, O.; W. N. Morgan, O.; J. F. Outcalt, O.; C. S. Pearce, Ill.; F. A. Pfouts, O.; J. R. Price, Mass.; W. J. Reid, O.; C. D. Richey, Pa.; R. P. Scudder, O.; G. M. Shafer, M.D., O.; C. L. Slutter, O.; H. E. Smith, O.; S. C. Smith, Ind.; A. C. Smysor, O.; W. D. Snyder, O.; F. McG. Sparks, Ind.; J. A. B. Srofe, O.; E. R. Stevenson, O.; W. W. Tarr, O.; B. C. Taylor, O.; H. B. Van Tress, O.; H. E. Weick, O.; A. Weiler, O.; J. F. Werner, Jr., Mich.; C. S. Williams, O.; E. F. Winchet, O.

Graduates, 75; matriculates, 210.

COMMENCEMENT OF THE INDIANA DENTAL COLLEGE.

The twelfth annual commencement exercises of the college drew a large audience to the Propylæum March 13th. The graduates, attired in Oxford caps and gowns, occupied an entire tier of seats on the platform, while to their left were the faculty of the college, a few invited guests and the member of the junior class. The invocation was pronounced by Dr. H. A. Cleveland.

Dr. M. F. Ault, of Kokomo, delivered an address to the graduates that contained much good advice.

The musical portion of the programme was very elaborate.

Dr. J. N. Hurty presented certificates to the members of the junior class, which will admit them to any dental college in the United States. Dr. S. B. Brown, president of the college, then presented the diplomas to the graduates, forty in number. Their names are O. A. Keiser, J. M. Lewis, L. Lichtewalter, A. O. McCutcheon, Miss L. B. McCullum, O. F. Overstreet, Otis Palmer, B. T. Perkins, L. W. Roe, Geo. S. Rhea, P. A. Row, Frank Smith, Mark Smith, O. V. Simmerman, Mrs. Hattie G. Scott, Elias T. Shields, A. L. Austin, W. E. Armstrong, Water S. Beazley, J. N. Brimmacombe, B. D. Curtis, M. M. Cook, C. P. Danks, E. B. Foulds, C. Feigel, Charles G. Hoover, H. C. Heaton, C. B. Hayford, Wm. Johnson, James B. Jacques, Geo. C. Keel, M. W. Johnson, M. J. Keightly, R. H. Kiser, L. J. Stivers, C. E. Whitesides, C. F. Williams, H. M. Zehrung, C. P. Tinkham and Maurice Raschig.

TO THE PRACTITIONERS OF DENTISTRY THROUGHOUT THE WORLD.

The Southern and the American Dental Associations, at their respective annual meetings held during the past summer, by *unanimous* vote of each body declared in favor of utilizing the great occasion of the World's Columbian Exposition, to be held in Chicago, in 1893, by organizing a world's meeting of the practitioners of dentistry, to be held at the same time and place, August 31 to September 10, 1893.

In pursuance of this resolution, a committee of five from each body was appointed, and the joint committee so created was authorized to add five more to its membership, thus constituting an executive committee clothed with full power to take such action as in its judgment it should deem best to carry out the objects of its organizations, such action to be final and binding.

This Executive Committee is composed as follows:—

Appointed by the Southern Dental Association.—L. D. Carpenter, Atlanta, Ga.; J. Y. Crawford, Nashville, Tenn.; W. J. Barton, Paris, Texas; J. Taft, Cincinnati, Ohio; C. S. Stockton, Newark, N. J.

Appointed by the American Dental Association.—L. D. Shepard, Boston, Mass.; W. W. Walker, New York City; A. O. Hunt, Iowa City, Iowa; H. B. Noble, Washington, D. C.; Geo. W. McElhaney, Columbus, Ga.

Elected by the Joint Committee.—J. C. Storey, Dallas, Texas; M. W. Foster, Baltimore, Md.; A. W. Harlan, Chicago, Ill.; C. S. Marshall, Chicago, Ill.; H. J. McKellops, St. Louis, Mo.

The Executive Committee have elected the following as its officers: President, W. W. Walker; Secretary, A. O. Hunt; Treasurer, C. S. Marshall.

The objects had in view by the two great representative bodies authorizing and inaugurating the movement for the holding of *The World's Columbian Dental Meeting* are thus broadly and tersely set forth by the Executive Committee:—

"The bringing together for professional, scientific and social purposes, the dentists of the United States and of all other countries."

It is the desire, as it will be the effort, of the Executive Committee to so justify the trust reposed in it, that the contemplated meeting shall prove a brilliant and long-to-be-remembered success. It stands pledged to do whatever may be in its power to make the occasion contribute notably to the elevation of the profession, to stimulate the spirit of research, to strengthen fraternal courtesy, and to promote cordial co-operation among all who desire the advancement of dental science and art. The aim would be too limited, if it included less than this, and the enterprise will be a failure if it fall short of a realization of this ambition.

For the accomplishments of these objects, the hearty assistance of every college faculty, of every State and local society, and of every reputable dental practitioner, is earnestly requested.

All practicing dentists outside of the United States are cordially invited to participate in the meeting, without contributory cost; and there is reason to believe that the invitation will be accepted by large numbers of foreign dentists.

We desire and expect the presence of distinguished representative dentists from almost every civilized country, and nearly all of note in our own country, resulting in the largest gathering of dental practitioners in the history of the world.

Information as the progress of the work will be communicated through the journals from time to time, and meanwhile every dentist is urged to do all in his power to forward the object sought.

In behalf of the Executive Committee.

67 W. Ninth St., New York City. W. W. WALKER, *President.*

Our Aftermath.

Dr. J. J. R. Patrick tells us that he is engaged upon a work on Dental Anatomy.

Dr. W. H. Atkinson was 76 years old January 23, 1891. So says the *Dental Review*.

Married.—February 12, 1891, at Dayton, O., Gertrude, daughter of Dr. and Mrs. C. H. Leaman, and Mr. W. L. Gebhart.

The World's Dental Congress, Chicago, 1893. Keep it in mind; be prepared to go yourself and see that your neighbor goes too.

Instead of Napkins use Ivory's napkin clamp and cotton-rolls. Neater, just as efficient and more acceptable to the patient.—W. H. S.

Retaining Plates for irregularity cases, swaged from aluminum (about 26 gauge), is an idea we get from Dr. L. E. Custer, Dayton, Ohio.

Caps and Gowns have been adopted, we understand, by the students of the Indiana Dental College. For many reasons an excellent idea.

Modelling Compound Impressions should be varnished before pouring the plaster to make cast. Less trouble to separate from model and a smoother cast.

The Philadelphia Dental College has issued a "General Announcement," containing five full page views of the buildings and interiors of operating rooms and laboratories.

7th District Dental Society will hold its annual meeting at Xenia, Ohio, Tuesday, May 19th. An interesting program will be provided. Make a note of the day in your appointment book and be there.

The College of Physicians and Surgeons, New York, has become a department of Columbia College, and hereafter will be entirely under the control of the Faculty of Columbia. The property of the College of Physicians and Surgeons will be turned over to Columbia. The trustees of the medical college will go out of office on July 1, and their places will be taken by the trustees of Columbia.

Dr. E. G. Betty, Cincinnati, is making an index to *The Dental Register*—something that has been needed. *The Register* contains complete records of the meetings of "the oldest"—The Mississippi Valley Association of Dental Surgeons.

Not a Common Thing.—"This teeth powder is not common thing, as be selled in the world," says a Japanese advertisement. "It is powerful to hold the health of the teeth, and recover the teeth from its sick. If you only xamine you should find that it never tell a lie."

The Bacteriological World is a new monthly magazine devoted to the study of micro-organisms and diseases of bacterial or parasitic origin. Edited by Paul Paquin, M.D., V.M., Director Bacteriological Laboratory, Missouri State University, Columbus, Mo. Price $3.00 per year.

"Mucous Patches of the mouth or tongue, when not specific, are frequently troublesome and painful. Dry them and paint the surface with

Resorcin, - - - - grs. xl.
Aqa, - - - - - ℥ ss"—*Dental Review.*

[We have found the above very efficient.]

Bright Metal How Screw Posts are made of nickel and should not be used in dentine. If used in a tooth with a crown, the latter will be stained a beautiful green, if in a root it is only a question of time until the post becomes insecure from the wasting of that part which is in the dentine. All that we have removed and those that failed, were from ¼ to ½ thinner where they were in the dentine—in most of them the thread was entirely obliterated. The crown metal or platinum posts are reliable, although not so hard or stiff as the bright metal.—W. H. S.

The Senior Editor is 71.—Saturday, March 15th, 1891, was the anniversary of the birth of Dr. Geo. Watt, and some of his friends paid their respects to him at Xenia. Among them were Drs. J. and W. Taft, James Leslie, E. G. Betty, O. N. Heise, Cincinnati; J. J. R. Patrick, Belleville, Ill.; and L. E. Custer, Dayton. After having a good time, and getting away with all the Sunday provisions of the editor, they proceeded to do up The Country Dentist in like manner. All were so well pleased, however, that they are going to try it again in May—the visitors agreeing to bring their wives next time.

The Human Breath.—Professor Brown-Sequard made experiments to determine whether the human breath was capable of producing any poisonous effects. From the condensed watery vapor of the expired air he obtained a poisonous liquid, which, when injected under the skin of rabbits, produced almost immediate death. He ascertained that this poison was an alkaloid, and not a microbe. The rabbits thus injected died without convulsions, the heart and large blood-vessels being engorged with blood. Brown-Sequard considers it fully proved that the expired air, both of man and animals, contains a volatile poisonous principle which is much more deleterious than carbonic acid.

THE TEETH OF LOUIS QUATORZE.—In the *Union Medicale* appeared an interesting article by Dr. T. David, entitled "*Les Dents de Louis XIV.*" It is founded on the reports which were drawn up and carefully preserved by that monarch's physicians and dentists. Louis XIV., whose father died of phthisis; who suffered from fistula in his youth; who was addicted to exhausting pleasures; who was perpetually exposed to all kinds of mental annoyance; and who certainly performed a large amount of hard work, happened, nevertheless, to live through the longest authentic reign ever recorded—namely, seventy-two years. His teeth were very unsound, and, before middle age, all those in the upper jaw had been lost or reduced to carious stumps. As the King had a large appetite, and could not masticate his food, he was subject to severe dyspepsia. Throughout the whole of the memorable year 1685 he suffered from osteitis of the upper jaw, following the extraction of a stump, with suppuration in the antrum and decomposition of the pus. On one occasion the carious alveolus was touched fourteen times in one day with the actual cautery. Dr. David concludes by pointing out that the Great King had, in this illness alone, quite enough to try his patience; and it is not surprising that some persons have suggested that to this dental affection may be attributed the evil state of mind which caused Louis XIV. to sign the revocation of the Edict of Nantes in November 1685.—*British Medical Journal.*

DOCTORS AND ADVERTISING.—Bitter complaint is heard from the medical profession regarding the severity of the unwritten law of professional etiquette. It is not that medical men are forbidden to advertise themselves; it is that they are constantly under suspicion of advertising themselves when they are really doing nothing nothing of the sort. Lecturing is just now the bone of contention. If a medical man has the gift of public speaking "on every conceivable topic," as somebody has sneeringly put it, why cannot he be allowed to instruct and entertain his fellow-creatures from a public platform? And if the committee of the local literary and scientific institute will print the name of "Dr. Abernethy Astley Cooper Jones" in big type, with a whole row of initials after it, is it fair to make him responsible for that? A medical correspondent of the *Lancet*, who from obvious motives suppresses his name, confesses to finding "intense pleasure and relaxation in addressing an intelligent audience," but he had to endure the "darts of slander." A friend of his, a medical man of similar ability and most excellent literary attainments, loved and respected by all who come in contact with him, has the fortune or misfortune to be one of our best public speakers. He can make ten guineas by one evening address and earn as much in an hour and a half as his detractors can do in a week, but, owing to the "intolerable priggish attitude" of his fellow-practitioners, he is obliged even to cease his gratuitous efforts on behalf of the churches, chapels and local charities.—*London News.*

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"A word fitly spoken is like apples of gold."—SOLOMON.

THE BITE, AS AFFECTING CERTAIN MODES OF TREATMENT ADOPTED IN THE CORRECTION OF IRREGULARITIES.

BY LEONARD MATHESON, L.D.S.

(1) Extraction, as a means *per se* for the treatment of irregularity.—This large subject I shall only deal with in a very limited way—to the extent, namely, of considering briefly the question of the removal of molars or bicuspids for the relief of general overcrowding of the arch as a whole. There are those who argue—on paper—that extraction for this purpose is, in all but the most exceptional cases, to be utterly deprecated, that it is little short of criminal, in fact, to extract any tooth which in itself is not beyond saving; but I have yet to meet any one entitled to respect as a practical man who can urge and prove that more good is done by the retention of the full number of teeth in a crowded mouth, than by judicious extraction. Theoretically, it is no doubt highly desirable to keep the dental arch intact, and sedulously to avoid any disturbance of a denture in which the teeth articulate normally; but it is not difficult to maintain, in the first place, that in crowded mouths the articulation is rarely

quite normal, and is frequently much improved by extraction, and in the second place, that even where the "bite" is normal, the teeth may be so jostling one another, so weak in structure, and so extensively decayed, that it is far better practice to remove some of them bodily, even though by so doing one may disarrange the articulation and leave spaces which form receptacles for food, to the detriment of adjoining teeth, than to attempt to save every individual organ in the mouth of young patients often incapable of bearing extensive operations. I did not intend, however, to discuss fully the general question of extraction for the relief of crowded mouths; but taking for granted the wisdom of extraction when done with discrimination and due regard for the circumstances of each individual case, I wish for a few moments to consider the more limited question as to which teeth one's choice should fall upon for removal.

As a matter of fact it is an almost universal practice to get rid of the four first molars. Generally speaking this is, I believe, a rational procedure in view of the facts that these teeth are very commonly the most prone to decay, and that their removal gives a larger amount of room than the loss of any other tooth does. But in a good many cases there are considerations, mainly concerned with the "bite," which contra-indicate the choice of the molar, and point to one of the bicuspids as the tooth to be sacrificed. These considerations are often overlooked, and in consequence the number of molars extracted is unduly swelled.

It ought never to be forgotten that the first molar is the chief grinding tooth. As a masticator it stands pre-eminent over the other teeth, its surface being usually larger than that of the other molars, and of course much larger than that of the bicuspids, whilst its position is uniquely favorable for the efficient and comfortable trituration of the food, it being far enough back to enable the tongue easily to keep large morsels of food between it and its antagonist. As far as its position is concerned, it may be urged that if extracted at the proper time the second molar takes its place, but this is only partially true, for though the second molar may come forward far enough to be in contact with the second bicuspid, its vertical axis is almost invariably tilted forward to some extent, so that it does not squarely antagonize with its opponent, the distal portions of the crowns alone coming into close apposition.

Bearing this in mind, and considering that the amount of space required in a crowded mouth is often not greater than the loss of four bicuspids will amply furnish, the comparative condition of molars and bicuspids ought to be most carefully examined and weighed at the time that extraction is decided on, and when it only remains to determine which tooth shall go. It will occasionally be found that the second bicuspid is in a worse condition than the molar, and it will often be found that its condition is nearly if not quite as bad, especially when it is remembered that the molar has had three or four more years of wear and tear than the smaller tooth. In these cases, providing that the molar is not so diseased but that it can be rendered a permanently useful tooth, the best course to pursue is the extraction of the second bicuspids. In addition to the advantages of retaining the molar which have already been pointed out, it may further be noticed, —first, that the loss of a bicuspid in its stead gives more immediate relief to crowded incisors and canines; and second, that given a molar and bicuspid equally diseased, it is, as a rule, much easier to save satisfactorily the former than the latter.

Turning back now for a moment to those cases in which the loss of the first molars is fairly indicated, it is nevertheless generally of the utmost importance that these teeth should be patched up and kept comfortable, and the extraction if possible delayed until the second molars are quite erupted, and this for three reasons: first, that if the extraction is done at an earlier date the health of the patient is seriously endangered by inability to masticate properly; second, that the second molars tilt less the later the extraction of the others takes place; and third, that early extraction may injuriously affect the position of the incisors by leaving them and only partially erupted bicuspids to bear all the strain of the "bite."

(2) "Raising the bite." In those cases of irregularity where projecting incisors are kept in the abnormal position by the close contact of the lowers, it becomes necessary partially to "raise the bite," that is, to induce, or allow of, growth upwards and downwards of the lower and upper posterior teeth respectively; so that the upper incisors, being relieved from the constant pressure keeping them out, may be brought into a better position.

The methods for accomplishing this vary in detail according to the circumstances of the individual case in hand, but a typical appliance for the purpose is a simple vulcanite plate made to cover the palate without capping any of the teeth. This being regularly worn for some time prevents the lower incisors from rising any more, their tips being made to impinge against vulcanite, whilst it allows of the molars lengthening. I have drawn attention to this class of cases, because it is the "bite" of the lower incisors which, if not the original cause of the projection of the upper teeth, is the means by which it is maintained, and because unless close attention be paid to the "bite" generally throughout the conduct of such a case, its last state is likely to be at least as bad, and probably worse, than its first. For having, by means of the simple palate plate, obtained space between the upper and lower incisors, and having inserted an appliance for the retraction of the uppers, it is necessary to take measures against the lowers rising again, and as they are always ready to do if left to themselves. If, for instance, the plate used in the retracting process is made to cap the molars, then it may be found that by the time the upper incisors have been brought into a normal position the lowers will have grown upwards, so that when the plate is out of the mouth they will forcibly press, as before, against the uppers. Therefore one ought, in such a case, to avoid capping the molars, in order to leave as little room as possible for the lower incisors to rise in.

In the correction of other forms of irregularity besides that just detailed, and in the use of retaining plates, it will often be manifest, if a careful study of the "bite" is made, that the articulation will suffer from prolonged capping, and this method of holding regulating plates in place ought therefore to be cautiously employed. Where there is difficulty in obtaining a firm hold for plates without capping, appliances attached firmly to one or more of the posterior teeth by means of snugly-fitting collars and oxyphosphate cement prove very useful.

(3) "Jumping" the bite. This unscientific but useful term is applied to an operation which, when it can be accomplished, is a very pretty one, and one which helps very materially to improve certain mouths. By its means such a sudden alteration is made in the whole articulation as to justify the use of the word "jumping." Its peculiarity consists in this, that whilst every other regulating operation aims simply at altering the position of the teeth in relation to the jaw which carries them, this operation alters

the relation between the jaws themselves — in other words, the bite is "jumped" by the lower jaw suddenly, in the course of a few days being made to close upon the upper in a manner entirely and markedly different to that in which it has been accustomed to close.

The operation is called for in cases where the upper incisors project, where the lowers bite far behind them, and where, besides these conditions, the bicuspids and molars inter-articulate abnormally, the lowers closing too far back, by the whole width of a tooth, the chin being consequently very retreating, and the facial expression weak and foolish. What has to be done here, if possible, independently of some retraction of the upper incisors, is an alteration in the position of the lower jaw, so that the chin may be brought bodily forwards. This desirable end may be attained by various means. In a most interesting communication brought before the New York Odontological Society by Dr. Bogue and printed, with illustrations, in the *Dental Cosmos* of May, 1887, the bite was "jumped" simply by the expansion of the upper arch in the canine region. In this case it appeared that the distance between the upper canines — measured directly across the palate — being abnormally small, the lower teeth were simply unable to close in their proper position, and the whole lower jaw was kept back. The lowers biting as usual inside the uppers, but themselves forming an arch of normal width, the narrowness of the upper arch kept the lower back, so that when the former were expanded, the lower jaw as a whole, in the course of a few days, came forward and articulated in the usual manner with the upper. This result of expansion in the upper canine region was quite unexpected by the practitioner in charge of the case, the actual state of things being indeed not apparent to him until pointed out by Dr. Bogue.

A somewhat similar case, at least in its unexpectedness and rapidity, occurred in my own practice. Having drawn back some prominent upper incisors in a case with a markedly retreating chin, and desiring to keep them in position, I attached a retaining wire to gold caps made to fit the second upper bicuspids — the first molars being gone and the second scarcely long enough to furnish a secure hold. In order to prevent the bicuspids themselves being brought forward, instead of the incisors being held back, I furnished the caps with tiny inclined planes, directed downwards and backwards for the lower bicuspids to bite against. In a week's time I saw the patient, and was not a little pleased to find, that not only had the end I had in view been accomplished, but the lower jaw had come right forward by the width of a tooth, and the retreating chin offended one's eyes no longer.

It may be observed in both these cases, but particularly in first, that the movement of the lower teeth was due, not to any active mechanical interference with them, but to a spontaneous action on the part of the lower maxilla, when once it was set free from the abnormal position that it was locked in by the bite.

EXANTHEMATOUS NECROSIS.—A CASE IN PRACTICE.*

BY C. E. CASE, D.D.S., CEDAR GROVE, IND.

Of the various forms of necrosis that came under treatment at the Ohio Dental College during the session of 1890–91, one was placed in my charge. It was a typical case of the exanthematous form and occurred in the inferior maxillary of a boy of eleven years of age. He had been injured by a missel falling from a house and striking him on the head, after being removed to the city hospital he was taken ill with typhoid fever from which he did not recover until the end of six weeks.

After leaving the hospital he was treated for necrosis by a city physician, after leaving there he next applied for treatment at the office of a dental company and was referred to the Ohio Dental College. The case was examined here Nov. 18th and was found to be a well developed case of exanthematous necrosis involving both sides of the inferior maxillary. The sequestrum on the left being larger than that on the right; both were loose at their anterior portions; pus was exuding from their bases and giving off an exceedingly offensive odor. The gum had sloughed away, and the membrane on which the sequestra were encroaching was inflamed and very painful when touched, so that mastication was impossible. The pale, pinched appearance of the child's face told of improper diet and very imperfect digestion.

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* A thesis submitted to the faculty of the Ohio College of Dental Surgery, March, 1891

On examination with instruments it was thought that the erupting permanent molars might be saved as the first ones had just been thrown off, and the sequestra which extended from the second molars to the first bicuspids seemed to have little attachment at the base. The patient was given the following treatment to be used a short time before removing the dead bone:

℞ Syrupi ferri iodide - ℥ iss.
Magnesia Sulph - - ʒ iss.
Aqua - - - - ℥ iss.
M. Sig.: teaspoonful after meals.
℞ Potassa Permangnate - gr. vi.
Aqua - - - - ℥ vi.
M. Sig.: mouth-wash.

This treatment was continued until Dec. 5th, the case being examined about twice per week. At each examination it was found that the sequestra was losing its attachment and the surrounding tissues gradually resuming their normal color and condition. At this date that portion on the left side was removed after making an application of cocaine, after being removed the papilla of the permanent teeth were found imbedded in the sequestrum in such a way that it would have been impossible to have saved them. The boy's physical constitution not being in a condition for the removal of both portions of bone, the treatment was continued until the middle of January when the other portion was removed and the patient discharged.

NOTES ON THE TREATMENT OF PULPLESS TEETH WITH ARSENIOUS ACID.*

BY M. H. FLETCHER, M.D., D.D.S., CINCINNATI, OHIO.

The late experiments of Professor Miller seem to have put us in the way of pulpless teeth more intelligently, for the reason that we now have some facts as to what kind of germs we are dealing with. We do not question that they have already been successfully treated by the intelligent practitioner, yet we have not been treating these conditions with a specific idea of the kind of life we are trying to destroy. I venture to suggest a plan (not entirely new) by which both patient and operator may be saved time and annoyance. The theory is first that gas forming bacteria must be gotten rid of before these cases can be successfully disposed of, and that this condition can most quickly and conveniently be accomplished by the use of arsenious acid or other strong germicides. I first venture the statement, that there is no lesion of the tissues of the body (not self-limited) more amenable to treatment than the one in question. This is proven by the many and various kinds of treatment suggested and practiced. Many operators go so far as to say that they "never lose a case." While they believe this to be true, it is probably safer to say their loss is exceedingly small. Now if it be so simple a process to treat these cases successfully, it should also be a short process.

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* President's Address read before the Mississippi Valley Dental Society, held at Cincinnati, March, 1891.

Dr. George Cunningham, of Cambridge, England, gave three years ago a paper and statistics on the treatment of such teeth with arsenious acid. He says of their curability, "The success of the operations seems mainly to depend on the old axiom, 'The cause being removed, the effect ceases.' No observant operator can have failed to notice the inherent curability of abscessed teeth. Who has not noticed the frequency of cicatricial tissue marking the existence of former fistulous tracts, even where the putrefactive contents had been allowed to remain? It is to this inherent property of spontaneous curability that we look for the relief and cure of all the injurious conditions arising from a putresently diseased pulp." Dr. Cunningham designates the arsenical treatment as the "immediate method," and the other and longer processes he calls the "dressing method."

We do not claim originality in what we wish to present, except possibly the formula used, and the manner of its use. Dr. Cunningham gives the following:

℞—Arsenious acid, gr. ii;
Alcohol, f ʒ i;
Oil of cloves, f ʒ i.

He reports a loss of only three teeth out of five hundred and twelve treated. Our own formula is:

℞—Arsenious acid, gr. ii;
Precipitated chalk, ʒ i.

Add glycerin to make a thick paste.

(Arsenious acid is only slightly soluble in water, one part dissolving in about fifty of water, and slightly more soluble in glycerin, so that only small portions of arsenic would be carried to the pulp-chamber. No chemical union results from the mixture of arsenic with the chalk.)

The latter formula I consider better, because it is more easily manipulated, and, in consequence, is less dangerous to surrounding tissue: 1, because the quantity is small by its admixture with chalk; 2, because the quantity is easily measured by the eye, and, being in a semi-solid form, is not likely to be forced through the apical foramen as a fluid might, while yet there is present an ample quantity to be a thorough germicide. The dose of arsenic is from one-twentieth to one-fourth of a grain; the stomach of an adult readily takes up this quantity. But in its use as we recommend there is probably not more than one-fortieth of a grain applied in any case, and this not in contact with soft tissue at any place unless it be forced through the foramen; and should this occur, and there be a pus-sac, the one-thirtieth or one-fortieth of a grain of arsenic would most probably be good treatment for it, acting upon the pus and destroying bacteria, and having done its work would become absorbed by the blood-vessels with no destructive effect upon the tissues.

It may be used as follows: Take of the arsenical compound about half a grain, a portion about equal in size to a half grain of wheat, place this upon a glass slab and mix with it a drop of water from the end of the finger; then with a nerve-broach covered with cotton mix the two thoroughly. This is introduced into the pulp-canal, which has been previously cleansed, dried, and washed with alcohol, being careful to get the canal thoroughly filled. Then dry out again, and, in the majority of cases, fill immediately both roots and crown with any material desired. Teeth with small and tortuous root-canals, into which it is difficult to explore or force a fluid, are probably better left with the dressing in for a few days.

My statistics (one hundred and forty-eight cases in the past eighteen months treated after this matter) show only two cases from which the dressing had to be removed to give relief from pain.

Another advantage in the use of the arsenic in this form is that small particles of the salt are carried with the solution into the root-canal and remain there. The continual presence of such a germicide in the pulp-chamber and canal is perfectly legitimate, since the canal is in no way connected with the circulation after the death of the pulp, and has no connection with the cementum which will allow the passage of any destructive agent.

These canals, if not filled nor sterilized, would most likely cause trouble sooner or later. According to Dr. Cunningham, they may be safely left without filling if kept thoroughly antiseptic. The plan adopted by him was to cleanse the pulp-chamber and larger root-canals, then cover one side of a piece of paper with his arsenical compound and put it into the pulp-chamber with the arsenic side toward the canals, then proceed to fill upon this with a cement, finishing with any other material desired.

The plan of using cotton saturated with carbolic acid and other antiseptics and filling over them is one of the oldest of the many methods; but have we not all been obliged to remove many such dressings after they have had time to become useless as antiseptics? The list of agents and plans for dressing root-canals is too long to give now; but according to our experience nothing so completely fills the requirements in every particular as arsenious acid. Fowler's solution might be used, but its strength is not always certain, and there is no crystal of the salt left in the canal to keep it antiseptic. We have also tried a solution of bichloride of mercury, and even with a 1 to 1000 solution trouble ensued. The powdered bichloride might be used in the same manner as the arsenic, but it is so much more soluble in water and so dangerous to tissues that it is less desirable.

According to Professor Miller, some very active agent must be used to sterilize a pulp-chamber. On page 97 of his late work on micro-organisms he says, "Attention has already been called to the fact that the dental pulp presents in a high degree the conditions essential to the formation of spores, and since spores possess high powers of resistance, the antiseptic treatment of root-canals is thereby rendered more difficult."

The necessity of destroying these germs is clearly set forth in the same work, page 111, where he says, "I would call especial attention to five different gas-forming bacteria, which invariably form large gas-bubbles in the gelatine, or tear it to pieces, as represented in the figure. One of the bacteria, which generates considerable quantities of gas in albuminous substances, I found in the human fæces as well as in a gangrenous tooth-pulp. Its appearance in the latter place may help to explain the frequent occurrence of dental abscesses. If a tooth be filled before removing the necrotic pulp and sterilizing the root-canals, the gas formed will force itself through the foramen in the apex of the root, or carry particles of the putrid pulp along with it, causing irritation, if not immediate inflammation, of the pericementum."

Thus it would seem, not only from recent investigations, but from the past experience of most practitioners, that the agents used have been such as would destroy organisms and spores, whether they were used with this idea or not. But in many cases the teeth were kept sore for weeks, and sometimes for months, by the frequent introduction of steel points or medicaments, each time introducing a few more bacteria, while explaining to the suffering patient that the case was a most difficult one to cure. On the other hand, the rational treatment would seem to be that of removing the exciting cause by thoroughly sterilizing the pulp-chamber and canal in the shortest possible time. Exciting causes may be foreign bodies, either fluids, solids, or gases, all of which are accompanied with bacteria. Once these influences are removed, the spontaneity of tissue is such that it will soon return to its normal condition. If the idea of the natural tendency of tissue to return to its original state can be thoroughly instilled into our minds, and also that we are simply to allow the living tissue to do what it is continually trying to do, then the treatment of abnormal conditions is greatly simplified. Time will be saved to patient and operator, and we will soon find ourselves in touch with nature, which means immediate success in many cases where we now have much trouble.

Keeping in mind the old axiom, that "the cause removed, the effect ceases," our trouble in the treatment of pulpless teeth is reduced to a minimum, and our patients saved both time and annoyance.

DISCUSSION.

Dr. J. R. Callahan, Cincinnati, does not think that all of the microbes contained in devitalized tooth roots can be killed by means of warm or hot air.

Dr. J. W. Jay, Richmond, Ind., cited a case of abscess that he had treated so long with carbolic acid and other antiseptics without succeeding in curing it that he became tired of such treatment and decided to test a filling. Accordingly he used warm gutta-percha as a filling and the abscess readily healed. It raised a question in his mind as to what it is that heals these abscesses?

Dr. C. P. Dennis, Portsmouth, O., said that a few years ago a certain dentist, at the Ohio State Dental Society, advocated pumping chlora-percha through the foramen of an abscessed tooth until the material appeared at the opening of the sinus, to affect a permanent cure. This was severely criticised, but that same dentist nevertheless continued this treatment with great success and uses it to-day.

Dr. M. H. Fletcher, Cincinnati, said he had for the past five years been doing this very thing and the abscesses so treated *do get well.* As to what makes them heal he thinks it because the irritation, causing the abscess, is stopped.

Prosthetic Dentistry.

[This department will be devoted exclusively to Prosthetic Dentistry, including Crown and Bridge-Work. We shall be pleased to receive from our readers such practical contributions, short items or queries upon this subject as they choose to contribute.]

TAKING THE BITE.

BY W. BUZZELL, D.D.S., PORT CLINTON, O.

I have often seen directions given for "taking the bite," but do not remember seeing any method that seems to me as satisfactory as the following:

For a full case.—After making the casts make trial plates of moulding composition which is quickly pressed and trimmed into shape, and has sufficient rigidity so that it can be introduced into and removed from the mouth without risk of changing its form. On these build up ridges of wax to represent the length and fulness of the teeth, using enough wax to permit trimming when getting the bite. Place them in the mouth, trimming the wax until the occlusion is satisfactory. Mark the median line and make other marks from one wax ridge to the other so that you can see whether they come together alike every time. Test the correctness of the occlusion by any of the usual methods of securing it; for example, instruct the patient to swallow, to bring the jaws together with the head thrown back, etc., noting every time how the marked places come together. When you are satisfied that the occlusion is what it should be, skewer the pieces together with pins and remove. If they should be accidentally separated the marks will show how to put them together again. When mounting the upper teeth the lower wax mould forms a convenient guide in arranging them.

For a single set a slight modification of this method is equally certain and as easy to apply as any I know of. Make the trial plate of modelling composition as before, but make its thickness in front equal to the length of the bite. Before putting on the wax insert the trial plate and mark where the teeth strike it, verifying the correctness of the occlusion as before. Put on some softened and have the patient close his teeth into it, and keep them closed while you part the wax in front and see if the teeth correspond with the marks previously made on the trial plate. If correct replace the wax and remove. When an upper plate is to be made and only the anterior teeth are present on the lower jaw, sufficient wax should be put on the heel of the trial plate to receive the impression of the edentulous position of the lower jaw, to prevent the plate from tilting while the bite is being taken. Since I have been following this method I have had no trouble from incorrect occlusion.

A METHOD OF PREVENTING UPPER AND LOWER DENTURES FROM SLIPPING FORWARD.*

BY WILLIAM DALL, L.D.S., GLASGOW.

It is with some diffidence that I bring before you this method of keeping upper and lower dentures from slipping forward, and indeed rendering them absolutely immovable. I can assure you I have undertaken the task only after mature consideration, as it is a subject that may cause no small amount of discussion, especially as many of you, my *confrères*, are more versed in bacteriology, and osteology than myself. I may say that in one way

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*A paper read before the Odonto-Chirurgical Society of Scotland and published in *Dental Record*, Jan., 1891.

my method might involve serious consequences were it practised by careless or indifferent operators, but with ordinary care it may help you, as it has helped me, to overcome a difficulty against which most of us have had to contend. As I have not seen anything relating to this method, it occurred to me I could not do better than bring it before you, not only for your consideration but also for my instruction, as I trust it may prove a stepping-stone to something more perfect. It is not my intention to trouble you with a very long paper, as two of my patients have been good enough to accompany me, that you may see and judge of the results for yourselves; so I shall give you a general outline only of the method. My method is simply this: to fasten two gold pins to the denture; these enter holes either made by drilling the jaw-bone, or caused by the reparative processes occurring in that bone around the two pins that have been made to enter the sockets from which two teeth have been extracted. You will now see, in the patients before you, this method carried out. In these patients only the lower jaw has been dealt with. I have been unable to bring any one with an upper denture fastened according to my method.

The lower jaw of this gentleman (patient shown), was drilled three months ago, and a denture inserted about a week after the operation.

In the case of this lady (patient shown), the teeth were extracted about nine months ago, and a denture inserted on the third day.

In the upper jaw, it is even simpler and just as satisfactory where the bone has been drilled. After my experience, however, it is generally otherwise in the case where the pins enter the sockets of extracted teeth, as in this case, absorption seems to take place more in the upper jaw on the labial and buccal surfaces, than on the palatal, so that ultimately the pins become exposed and the desired end is frustrated, whereas in the lower jaw absorption takes place more equally, and so the hole or holes for the pins are left in the centre of the jaw. In some cases, however, I have been successful, and to such a degree as to supply two patients with upper dentures without palate plates, and these have been worn with perfect comfort for about two years, but as a rule, I now prefer to drill the upper jaw-bone.

The mode of procedure where the teeth have to be extracted is this: Extract the teeth, and the following day take the impression, modeling your case in wax, and seeing that all is right after the bite has been properly adjusted; then add the two gold pins to your case—one on each side where most suitable, that they may enter the centre of the sockets of two of the extracted teeth. These we will suppose to be the first bicuspids or canines, which are the most suitable. The pins should be as long as possible, indeed they must not be too short, or they are apt to set up irritation, and hence absorption. It is to this error I traced one or two of my early failures. Having fixed the pins to the model, again try it in the mouth to make sure that the pins are perfectly straight, as that is a most important point; then cut a slit in the model wide enough not to disturb them, fasten them to it with plaster, and proceed to vulcanize in the ordinary way.

When the holes are to be drilled, the method is very different.

For the lower jaw fasten a drill a little larger than the intended pin size in the right-angle hand-piece. Paint the part and around it with a 50 per cent. solution of cocaine, and the drill being saturated with Koch's solution, drill to the required depth. Of course great discretion must be exercised in choosing the part to be drilled. I would say any place between the mental foramen and the symphysis. Other places may be drilled with safety, but that altogether depends upon the formation of the patient's jaw. The upper may be drilled in any part, but care must be taken not to pierce the floor of the antrum. Having drilled the holes, the patient is then warned to beware of cold, supplied with a mouth-wash, composed of Koch's solution, etc., and asked to return next day. On the following day the holes are syringed out with Koch's solution, and the patient supplied with a different mouth-wash, for healing purposes. If not hurried for time, the impression is taken on the third day with the pins placed in the jaw, as in the case of pivots, or they may be inserted into the wax case before finishing, as in the former method. With patients from the country, I have inserted dentures on the third day, and as yet have had no bad results; indeed my first case, three years ago in January, was a patient from the country, whom I did not see for six months after the operation, when all was very satifactory, and to this day she does not suspect that the drilling of the jaw-bone was any unusual thing. My experience in drilling this bone has been that the right side of the upper is always harder than the left and generally a little more painful, whereas in the lower it is quite the reverse, the left being harder than the right. No doubt some of you will ask, what takes place in the jaws, where I have drilled? I have not the least doubt but that the walls of these circular holes become sclerosed, and if this be the case, I think you will say with me that there is very little danger. As to necrosis, I do not think there is any fear in regard to that after healing has set in, and especially in sclerosed walls.

Certainly I would not recommend the operation to be done with a careless and especially a strumous patient. To give me sufficient confidence to lay this matter before you, I took a patient and consulted one of our most eminent surgeons, and he was also of opinion that the walls become sclerosed.

Very little need be said of the method of inserting dentures with pins into the sockets of extracted teeth, as that may be done without any hesitation. Indeed, I might venture to say that if this method were thoroughly successful, which time alone will show, and were it put into general practice by all dentists, in the lower jaw at least, our difficult cases would ultimately disappear. If the drilling of the upper were carried out, we would be able in some cases to supply dentures without palates.

Since commencing this method about three years ago, I have drilled ten cases in all, seven in the upper, and three in the lower, and in one only, an upper, did inflammation and suppuration set in, through the patient catching cold, but which was quickly overcome by syringing with diluted carbolic acid and glycerine.

In fifteen cases I have inserted dentures, principally lower, with pins entering the sockets of extracted teeth.

NEW ATTACHMENT FOR VULCANITE ON A GOLD BASE.

There are many methods of attaching teeth with rubber to a gold base, but there are decided objections to all of them. My aim in producing this attachment has been to overcome these objections: to make a plate so that the edge of the rubber would not loosen from the gold, without soldering on rims, outside or inside, and without stays or pins; thus making a plate which can readily be reswaged after all the soldering has been done.

First, make the model, die and counter-die, and swage up the plate, the same as for any other attachment, using No. 28 or 30 gold plate, according to the case. Take a piece of plate No. 32, and swage up another plate over the first one. Trim the edges and set up the teeth in the wax on the plate. Trim the wax as desired inside. Mark the plate at the edge of the wax on the palatine side. Remove the teeth and the wax, and then cut the palatine portion of the outer plate as marked. Put this over the other plate and strike them up together in the dies.

With a plate-punch make a row of holes all around within one-sixteenth of an inch of the edge of the sectional plate, which now extends over all that portion of the plate proper which is to be covered with rubber. After making a row all around the edge, the rest of the surface is perforated with holes punched promiscuously. If the punch is not large enough, the holes may readily be drilled larger with the engine. Take a spear-pointed drill, larger than the holes, and countersink them on the under side.

If the piece has been sprung in handling and punching, it may again be struck up in the dies over the other piece. Solder the two together, around the edge only. Always solder the inner edge first; otherwise the outer edge will loosen while soldering the inner one. Never invest to solder.

Now put it in the dies and reswage, striking lightly, as, if too much force is used, the lead will enter the holes and spread out in the countersinks, thus preventing the plate being removed from the counter-die. Now the teeth may be set on, and the case flasked and finished in the ordinary manner.

This makes a strong, substantial plate. The edges of the rubber will never become loosened from the gold. This gives the best attainable results in the shape of a gold base with rubber attachment.—J. H. Downie, *Cosmos.*

BRIDGE MAKING.

As a rule of practice, we think it always best, especially in removable "bridges," to strike up, and adapt accurately to the gum-ridge a thin, narrow, gold or platina plate, to which the bar—or, technically, the "cord" of the bridge—should be soldered. This plan, while covering a small and practically inconspicuous and invisible surface of gum tissue, will afford a support that will largely relieve the strain of prehension and mastication upon the teeth or roots to which the "bridges" are secured.

The open spaces sometimes left, with the delusive idea of *easy* or even *self-cleansing* surfaces, with just the heels of the artificial crowns slightly touching the gum, will, in the end, strain and overtax the firmness and fixedness of all teeth or roots to which such appliances may be attached.

We all know how easily and readily the strongest and most firmly fixed tooth or root may be loosened and moved from its position by constant and even interrupted pressure and tension. Another danger is the re-awakening and lighting up of old troubles in such pulpless teeth and roots as had been restored by treatment to relative health comfort, by a "bridge," unsupported, except at its two extreme ends, and upon which hard, tough and resisting food, as well as other substances, are daily and hourly bitten and masticated.

Make your "bridges" of gold, platina, aluminum, or whatever base you may select, as light as is consistent with the requisite strength, and give them all the support practicable between the "abutments and piers," and you will—all other conditions observed—bestow upon your patients a benefaction as grateful to them as it will be honorable to your science and skill as representative Virginia dentists.—DR. THACKSTON, *Sou. Dent. Jour.*

To REMOVE THE BLACK DEPOSIT from rubber plates that have been in long use, I take of alcohol, ammonia, and chloroform equal parts. Pour a little of the liquid onto the plate, add pumice stone, and quickly scour; then polish with oil and plaster, in the usual way.—DR. W. D. TICKNER, Randolph, Wis., *Items.*

Correspondence.

"I charge you that this epistle be read."

POST-GRADUATE SCHOOL OF PROSTHETIC DENTISTRY AND DENTAL LABORATORY.

WE are pleased to note the benefits the profession is obtaining from Dr. Haskell's school. The following letter is one of the many testimonials that have been sent Dr. H. by practitioners who have taken the course:

Monroe, Iowa, April 2, 1891.

Dr. Haskell:

Dear Sir,—Yours of March 2nd is at hand. In reply I will state that I know nothing of college methods of teaching prosthetic dentistry, but I can certify that the methods of the Post-Graduate School are effective. I can give satisfaction now in many cases in which I formerly considered it next to impossible to put in anything that could be worn. My patrons who wear plates are very much interested in the specimens I brought back from Chicago, and for a sick man I have done a large business this winter, and not the least difficulty so far to secure a satisfactory and useful denture, though some of the cases are what I used to call difficult or even impossible. Of course I am liable to meet with a failure any day, but I am not as much afraid of it as I once was. You ask for a comparison of your methods with those of the colleges. If I am allowed to base an opinion upon the work of graduates that I have seen, I should say that there is no comparison, and the sooner the colleges find it out the better.

E. M. Waterbury.

Editors' Specials.

"Write the Vision and make it plain."

THE MULTIPLICATION OF COLLEGES.

We are a race of children. True, some of us have bodies that appear more or less antiquated. "Three score and ten" may suggest an aged body, but as to the other elements of the human trinity, the soul and spirit, they may be still quite youthful. During the war we saw a group of little boys organize themselves into a military body—company, regiment, division, or corps, they didn't care which. They had no discord as to the distribution of offices, for they were as well content to be corporals as generals. But after each had assumed the office of his choice, a sharp little fellow raised the question "Whom shall we drill?" and the organization was forced to disband for want of high privates.

Sometimes we feel a slight dread that pupils will not be found sufficient to allow one apiece to the teachers. But pupils are more numerous than in the days of our teaching.

A disposition and desire to teach are, probably, inherent in the human mind. If a man have ideas (and who has not) he desires to promulgate them. By associating himself with others he is more likely to find opportunities to teach; and the association of teachers is apt to be called a college.

Has it not been that the organization of one college has suggested the formation of others? A college may fail to provide places for all the ambitious and fit men. A game between the outs and the ins is almost inevitable. The outs want in, while the ins wish to stay in. And the result is not unlike that recorded by the evangelist, in which an "unclean spirit," who had been forced to become an out, sought rest but found it not; he joins with seven other spirits more so than himself, and another college is the result. And even then the men conscious of their own fitness are not all provided for, and something has to be done. They organize others, on the plan already described, and besides they magnify their office by multiplying official positions, subdividing the sciences, so that no one professor has much to profess, and still less to teach. A professor of tweedledum, and a professor of tweedledee, with an assistant to the chair of tweedle, is suggestive of a better equipped college than if but one man were to teach the three responsibilities.

From the primary school to the university, the tendency is towards cramming—too many books, too many teachers. We seldom see a boy or girl on the way home from school, that we do not think of a pitiful goose being stuffed for the accumulation of oil. Goose and pupil get about equal enjoyment from the relative processes. The one is not *feeding*, for that implies appetite, the other is not *education*, for that is leading out the intellect. Both are cramming.

Our subject is, by no means, exhausted. We may resume it, but we don't promise. Fortunately the evil we are hinting at, is self-limiting. It doesn't pay, and those concerned will get tired demonstrating how not to do it. And in process of time they will be able to show us a more excellent way.

OBITUARY.

W. H. ATKINSON, M.D., D.D.S.

DEAR DOCTOR WATT:—A great soul is marching on. W. H. Atkinson, on Thursday evening, April 2nd, at 9 o'clock, became *immortal.* The Sunday following, at 2 P. M., seventy-seven brothers attended the funeral at his residence (since 1863). "Rock of Ages" cleft for him, was sweetly sung by a lady friend, and "dust was committed to dust." One by one the procession filed past the casket, to look, for the last time, upon the natural face of him who had so long and benignantly looked into their countenances. Monday morning the sadly bereaved friends privately took the body, and laid it in mother earth, in beautiful Woodlawn cemetery.

The rest he has gained has been well earned. "He has given his beloved sleep." Seventy-six years of mortal life: what is the import of it? He has answered it best; the seed, as it has been given him, has been profusely sown. It will bear fruit so long as there may be use for our services. "A handful of corn on the top of the mountain." Can we better perpetuate his memory than by doing as he has done, as wisely as we may—give as it is given? not forgetting to give praise to the giver, as he gave it.

Yours truly, G. A. MILLS.

ATKINSON is dead! "W. H. A." Well, verily! We suppose it is so; but we can't realize it. Can't make it! We never indulged a serious thought as to what we should do were he to die. Perhaps we regarded him as nearly immortal. And that reminds us that he is not dead. An entrance into immortality and eternal life is not death. But what can we say more? The whole profession is aware that a good man—a great man has gone from us.

Our acquaintance with Dr. Atkinson began in 1854—thirty-seven years ago. At once it developed into the full warmth of personal friendship—a friendship not chilled down by the frosts of time, nor marred by the miasms of jealousy and envy. Being by five years our senior, we regarded him as an elder brother; but he treated us as his equal, and with his youthful instincts and methods, there was no jar in our social or scientific intercourse. He impressed his personality on the dental profession more than did any other man of his time. Hundreds tried to act like Atkinson, yet none succeeded unless to mimick a few of his weaknesses, for he probably had some of the frailties pertaining to humanity.

All in all, we shall miss him—we shall miss him! so much that we shall not expect to see his like again. We nominate no candidate to fill his place. We know of none with the size. "Your fathers, where are they? and the prophets, do they live forever?" Farewell! a short farewell.

What We See and Hear.

[We are always pleased to receive short, practical articles for this department, and invite any to send brief descriptions of such appliances, devices, methods, remedies, etc., as will be of interest to the profession.]

DETECTION OF PHENOL.—DR. E. HOFFMANN pours into a small test glass 1 or 2 c. c. of pure concentrated sulphuric acid, pours carefully over it, so as to form a separate layer, the same volume of the dilute aqueous liquid suspected, and drops in a few granules of potassium nitrate. If only 1 milligramme of phenol be present each particle produces at once violet streaks.—*Chemiker Zeitung.*

TO CLEAN BRITTANIA IMPRESSION CUPS.—Boil them for a few minutes in a strong solution of concentrated lye, rinse in hot water, and wash with soap and a stiff bristle brush, using, if necessary, a little finely powdered pumice stone; again rinse in hot water, wipe dry, and polish with whiting and a fine brush wheel on the polishing lathe. This will make them look as good as new.—*Items.*

PARTING SOLUTION FOR PLASTER IMPRESSIONS.—Dr. Conyers Topley, of Germantown, Pa., recommends for this purpose equal parts of castor oil and coal oil, colored with aniline red. (Diamond dye, to be obtained at most drug stores, while not quite as soluble, will answer the purpose. A minute quantity will suffice.) A thin coating insures a perfect parting. It soaks into the plaster of the impression, and does not fill up the fine lines as does varnish, etc., and yields a sharp cast.—*Items.*

Immunity from Diphtheria and Tetanus.—Dr. Behring has made known the chemical agent employed by him and Dr. Kitasato in their experimental investigations on diphtheria and tetanus. This is trichloride of iodine, which, injected subcutaneously in animals inoculated with either virus, not only cures them, but renders them immune to subsequent infection. Peroxide of hydrogen in ten per cent. solution can also confer such immunity in respect of diphtheria.—*Med. and Surg. Rep.*

Syphilitic Necrosis of Bone Liable to Recur.—Mr. Rilot, in speaking of syphilitic necrosis of bone, says that an important point to remember is that it is very liable to recur. He related the history of a case he had treated, where the necrosis recurred more than once, although the patient was strongly under the influence of mercury and iodide of potassium. The necrosis after the exanthemata was characterized by swelling out of all proportion to the local mischief. This class of necrosis frequently occurred in young life; he had seen it in a patient between five and six years old.

Pate Dentifrice.—Precipitated chalk, 150 parts; powdered white soap, 150 parts; powdered orris root, 50 parts; carmine, 2 parts; oil of peppermint, 15 parts; oil of cinnamon, 25 parts; glycerine, a sufficiency.

Dissolve the carmine in a little solution of ammonia, and mix it well with the chalk and orris root, then add the soap and the essential oils, mixing the whole thoroughly in a mortar, and sifting to ensure thorough division of the oils and the coloring matter. When this is done return the powder to the mortar, and make into a hardish mass with glycerine. The mass is now to be formed into cakes, and may be put up in tiny porcelain jars.—*Archives.*

Risks of Cocaine Injections.—The *Medical Press*, November 5, 1890, says that two warning cases are reported from France. In one of them, which occurred at Lille, the patient died, and the dentist who gave the injection was acquitted of neglect, but condemned for practicing medicine without qualification, the judgment indorsing the view that cocaine is an anæsthetic which requires to be used with prudence, and cannot legally be administered by other than a qualified medical man.

In the other case, which occurred at Paris, the patient was with great difficulty brought round by hypodermic injections of ether. The cocaine injection was also made in this case by a dentist.—*Med. and Surg. Rep.*

Aristol against Burns.—In an article on burns, Dr. F. von Kliegl (*Wien. Med. Presse*, 1890, No. 31), assistant to Prof. von Mosetig-Moorhof at the Vienna City Hospital, says:

"Experiments with other agents, such as sozo-iodol and aristol, have been made during the current year, and I shall describe them in my next report. But I may say one thing right here, viz., that aristol has, up to now, proven *most* efficacious in the form of a 10 per cent. salve."

Bufill (*Rev. de cienc. med. de Barcelona*, 1890, No. 8) also calls attention to the great value of the drug in burns. A 10 per cent. salve of aristol proved eminently efficacious.

F. Goldmann (*Apotheker-Zeitung*, 1891, No. 1) mentions the use of aristol in speaking of the frequency of burns received during laboratory work. These are sometimes of a peculiarly severe type, but a 5 or 10 per cent. salve, with lanoline, effected a painless and comparatively quick cure almost invariably.

Professional Fees.—There is no doubt an idea abroad, that professional fees do not exactly take rank on the same footing as debts incurred in satisfying the ordinary wants of nature, and undoubtedly from being brought into such close personal relations with one's patients, one often does let fees slide, rather than take those measures for their recovery that an ordinary business man would adopt. It is, however, as well to point out that, as far as we know, with the exception of general practitioners and dentists, professional men have protected themselves by adopting a system of prepayment. Medical and surgical consultants are paid at the time, and not uncommonly get their fee, whilst the more hardly worked medical attendant gets none. Barristers are either prepaid, or their fees are guaranteed by the solicitor, who has abundant power in his hands not only to get these but his own as well. It is therefore, especially important, that general practitioners and dentists should cultivate those business habits which will at any rate lessen their loss, and should at the same time encourage their patients to adopt the habit of paying their fees at the time of the visit.—*Editor Brit. Jour., D. S.*

IMMEDIATE TREATMENT OF HEMORRHAGE AFTER TOOTH EXTRACTION.—DR. RICHARDSON says: In the first place, if a little of the blood caught in a glass goes into a firm clot in two or three minutes, much cause for alarm is removed, and the course to be followed is clear, for there is the assurance that the blood is in a favorable condition for forming a plug, and naturally arresting the hemorrhage. Any one of three methods may be adopted, viz.: (1) The styptic. (2) The plug with pressure, with or without styptic. (3) The cautery. For convenience of manipulation, and for ordinary cases, Dr. Richardson did not know of a better styptic than stypti collcoid, which can be applied on cotton wool, and a firm plug inserted with facility. When this did not seem sufficient he resorted to perchloride of iron. In the second plan, that of the plug with pressure, he had used three kinds of plug, but the best in his opinion was a gutta-percha styptic plug, consisting of G. P. discs, each disc being saturated with styptic tannin or perchloride of iron. These could be kept ready for an emergency, and easily softened in hot water, or a flame, so as to become very plastic for insertion in a cavity. The bleeding tooth cavity is quickly dried with absorbent cotton wool, then filled with one of these pledgets, which is pressed well down until it has become quite firm. No fear of putting on the styptic too hot need be entertained, since heat favors coagulation.—*Dent. Rec.*

A STRAIGHT TIP.—Doing right is more important than knowing how, but it is often well to know how. A lady came into my office some time ago to ask my advice regarding her daughter. The latter had some years since fractured her left superior central in a line running from the mesial to the distal surfaces, from above downward, losing about half the tooth. It had given her no trouble, except the disfigurement, the tooth being alive and in good condition. The mother had consulted a number of dentists, who all advocated restoration by filling, or cutting off the remainder of the crown and substituting porcelain. These methods were objectionable to her, and it remained for me to suggest a porcelain tip.

The edge of the fracture was ground and filed perfectly smooth, and a plain tooth of the proper color and size was ground until it would replace the lost fragment. Correspondence with The S. S. White Dental Manufacturing Company followed, and the result was they made for the case a porcelain tip from the model and sample sent, with two holes drilled into it. It was but small work to secure platinum pins from an old tooth and cement them into these holes. These corresponded to similar ones in the tooth proper. A little pasty oxyphosphate cement and pressure was all that was necessary to secure the tip in place.

It has been in place over six months now, and is giving good satisfaction. The line of union is hardly discernible. The operation was simple, cheap, and satisfactory.—F. L. Dolbeare, Oshkosh, Wis., *Cosmos*.

Supplemental Report to a Case of Tooth Extracted from the Middle Meatus of the Nose.—At the meeting of September 9, I made a preliminary report of a case where I had extracted a tooth and a portion of the superior maxillary bone from the middle meatus of the nose. From the history of the case, I regarded it as one where syphilis has been contracted at the time of vaccination. The girl was vaccinated when five years old. Tne nostril had been obstructed for seven years. Four years ago an attempt had been made to remove some dead bone from the nostril, but the attempt was a failure. The pathological process by which the tooth and socket of bone reached its position in the nose was a matter that excited some discussion when the case was presented. Later developments will settle the matter for us.

At the time of operation I noticed a protuberance in the floor of the right nostril. Little attention was paid to it, as the ulcerated surface where the foreign body had rested and the deflected septum claimed immediate attention. But this protuberance grew slowly larger. In the latter part of December, something white showed through the membrane covering the protuberance. This white substance is certainly bony, and looks like another tooth. I have made no attempt to remove it, as it is firmly attached, and the operation would be difficult and painful. It is giving the patient no trouble, and by leaving it until it emerges further the question of how the first tooth made its way into the nose will be definitely settled.—Dr. Thompson, *Lancet-Clinic*.

Neuralgia Relieved by a Slight Operation.—Mr. Rilot cited a case of intense neuralgia relieved by a very slight operation. On seeing the patient it was evident at once that she was suffering}intense neuralgia; every time she opened her mouth to breathe or take food it caused pain which radiated over the whole of that side of the face. From the history it appeared that the trouble came on about six months previously. The usual remedies having been tried without effect, the patient was sent to Mr. Rilot, who, when she was under chloroform, made a thorough examination of the mouth—it had been suggested that possibly there might be some buried roots. He found that the sockets of some teeth which had been previously removed had not properly healed up, but there was neither bare bone nor buried roots. The interesting part of the case was that the mere probing of the sockets or the removal of a tiny piece of bone, or the chloroforming, had given absolute relief. Could any one explain the relation between cause and effect?

Mr. H. Baldwin, in connection with the case last related, wished to mention one which he had seen some little while ago. The patient, a young healthy man, a long time previously had had an upper molar extracted, and the socket healed up. When he came to Mr. Baldwin he complained of severe pain, which he referred to this point. Mr. Baldwin probed into this depression with a sharp probe until he felt it stick into the bone, and he recommended the patient to allow him to make just an incision across the depression with a lancet, which he did. The patient had written him and said he had had no pain since.—*Dent. Rec.*

Capping Exposed Pulps.—For the last year I have been experimenting some in capping freshly exposed pulps, previous to which my success was so limited that my usual practice was to devitalize and remove them. But now they seldom give any trouble. Whether they will in the future is more than I can say But this is certain: that I have never been able to keep them quiet so long before, only in exceptional cases. Whether it will prove as successful in the future as in the past is more than I know, but I think it will be well worth a thorough trial by the profession. Care must be taken to wash out the cavity with a solution of boracic acid, so as to be sure that all the fresh blood is removed, and while it is still moist lay a small scale of dry boracic acid over the exposed portion, and then fill; it is stiff, and prevents undue pressure on the pulp, and takes the place of metal or court-plaster that some use for that purpose.

What drew my attention to it first was from the treatment of a gunshot wound in my little boy's arm. The ball passed through the fleshy part of the arm about midway between the shoulder and elbow. An injection of a solution of boracic acid was forced through the opening on the opposite side of the arm, a tuft of antiseptic cotton was placed over both openings, and a bandage bound tightly over them running to the elbow. The bandage was not removed for three weeks, when it was entirely healed, no suppuration having taken place, which suggested the idea that possibly the same results might be obtained in recent exposures of the pulp. Subsequent experiments seem to be very promising, and I would recommend that the profession give it a trial.—W. H. Jackson, D.D.S., Ann Arbor, Mich., *Cosmos.*

Aristol in Dentistry.—J. V. Kejzlar, of Jiciu (*Austro-Hungarian Dental Quarterly*, October, 1890). says:

Some time since my attention was drawn to a new, powerful antiseptic, the thymol derivative, called aristol, discovered by Drs. Messinger and Vortmann, of Aachen.

It is the best substitute for iodoform, which, on account of its disgusting odor, is especially abhored by patients who have disorders of the mouth or teeth. Aristol has no disagreeable odor, and is easily endured by sensitive patients. It has no toxic properties, like iodoform, does not irritate, adheres very readily to loose-lying pulps, and has excellent healing properties.

I tried it in all cases of the most varied tooth complaints, in which the hitherto available antiseptics had been used, such as gangrenous pulps, antiseptic for the root canals, disinfection of carious cavities, before introducing the filling, and so on.

On gangrenous pulps, I strewed aristol in powder, with a fine brush, for disinfecting the root canals and carious cavities. I used a 10 per cent. solution of aristol in sulphuric ether; through the rapid evaporation of ether, the aristol forms an even coating, and rapidly dries the cavity.

For fistulous spaces, I use small rods made of ten parts cacao butter, and one part aristol, by which granulation and healing proceed rapidly.

Aristol is insoluble in water, but readily soluble in sulphuric-ether, collodion and fatty substances. It is generally used in 10 per cent. solution, or directly in the powdered form, externally for wounds, all kinds of swellings, for eruptions of syphilis, ozæna, otorrhœa, naso-pharngeal syphilis, in gynecology, and wherever antiseptics are indicated for external use.

Aristol may be regarded as an enrichment of materia medica, especially for disorders of the teeth, and it is very desirable that the remedy be further tried in this direction.

COMPARATIVE METHODS.

[Condensed from *Dental Mirror*.]

QUERY.

Suppose a tooth has ached slightly, and whilst excavating with the dam in position, the pulp is found slightly exposed so that it bleeds a little, but appears healthy—(1) *Would you cap? if so, with what.* (2) *Would you fill over such a cap? if so, how soon after.* (3) *Have you ever capped such an exposure, filled the tooth, and subsequently removed filling and capping, finding the pulp still living?* (4) *In your experience, what percentage of success have you had in capping healthy exposed pulps, and on what do you base your estimate?* (5) *Does the youth or age of patient interfere?* Note that this query refers to healthy pulps. If the evidence is against success in such cases, it would be folly to attempt capping diseased pulp tissue.

ANSWERS.

(1) I am not now so favorably disposed towards capping pulps, even when the case is such as is indicated by No. 1 of the query. (2) I do not think I would put in a permanent filling *immediately* over such a cap; would rather wait for developments. I would prefer to wait a year before filling over a capping. (3) I have capped such an exposure and filled the tooth. At a subsequent refilling found the pulp dead; and in another case found the pulp alive. (4) My experience is greatly against capping pulps. At one time I advocated the operation, but found that the percentage of failures was so considerable, that I have for some years given it up, almost entirely. (5) I incline to the belief that the age and character of the patient has much to do with the success of the operation. Men and women (but particularly the former), with dense, strong, hard, yellowish teeth, may have healthy exposed pulps successfully capped.

Theodore F. Chupein, Philadelphia.

(1) The age and physical condition of the patient would have much consideration. Generally speaking, if the patient were past middle age I would destroy the pulp. If the person were anæmic or in any low form of chronic debility or disease, I would prefer destroying the pulp rather than attempting its salvation. If the cavity was difficult of access and the point of exposure quite out of the range of direct vision, I would hardly consider it a hopeful case for capping. Within these limits I would certainly cap, and would expect in a large majority of cases a successful result. The essentials are to avoid pressure on the pulp and use nothing escharotic.

Chas. F. Allen, Newburgh, N. Y.

(1) Should cap in every such case. As soon as the bleeding ceases, which should be quickly in the case of a healthy pulp, I fill the cavity with a plug of cotton filled with an aqueous solution of hydronapthol 1 to 300 for the purpose of effecting disinfection. This is allowed to remain for a few moments, while the capping materials are being made ready. The cavity is then carefully dried, the least compression being avoided. The point of exposure should then be touched with carbolic acid—90 per cent. carbolic acid and 10 per cent. alcohol. The cap I prefer to be of platinum, which should be of a size to cover well beyond the area of exposure. These caps are punched out of platinum plate No. 30; pounding giving the concavity of form. The selected cap is filled to convexity with a paste composed of oxide of zinc, mixed with equal parts of carbolic acid and oil of cloves, to a consistency which will allow it to maintain the convexity, and yet it must be so yielding that it will flow out on the sides of the cap as it is put in place, without making pressure upon the pulp. In placing the cap over the pulp it should be laid to catch first at one edge and then carefully laid down, when some of the parts should flow out laterally. The assurance should be had that the cap is against the dentine. It would be well to state that in excavating the cavity all carious matter, in my opinion, should be removed; and this should be done without wounding the pulp. (2) My practice is to fill the cavity in such a case at once, as the longer it remains open the greater is the danger of infection and of consequent inflation. My fillings are usually non-conductive, or are made so. (3) I have very frequently performed the described operation and have opened the cases at

periods of from two years to fifteen years, finding the pulp living and in healthy condition. (4) It is out of my power to give you percentage of success in capping healthy pulps. (5) In reference to this query, neither youth or age appears to qualify the result.

LOUIS JACK, Philadelphia.

(1) I would cap with asbestos slightly moistened with Robinson's remedy. (2) I would fill immediately. (3) Have frequently capped such exposure and have found the pulp living, and sometimes have found it dead. Success is more likely with the young and healthy.

C. S. STOCKTON, Newark, N. J.

(1) Yes; with carbolized vaseline and one of Dr. Teague's concave caps. (2) Yes; immediately. (3) Yes, many; but a piece of heavy sand paper was used instead of Dr. Teague's prepared caps. (4) About seventy-five per cent. (5) Extreme youth or age will lower the percentage.

H. E. VAN HORNE, New York.

(1) Would cap every time, using asbestos felt touched with nervine vitæ, or carbolized resin. (2) Yes; at the same sitting. (3) Have capped and filled several; never had occasion to remove filling that I am aware of.

D. V. BEACOCK, Brockville, Canada.

(1) Don't cap an exposed pulp which has ached. More promise of comfort in root filling. (4) Probably one-fourth of apparently healthy pulps are painful or uncomfortably sensitive to thermal changes. (5) Age is an important factor. Would cap for young persons; when for maturer years would devitalize.

D. D. LESTER, Christiansburg, Va.

(1) Should certainly cap the pulp. I would cap with, first, a paste composed of oxide of zinc and iodine, covered with any suitable substance to prevent pressure; and then covered with any good oxyphosphate cement. (2) I would fill over such cap, as soon as cement was hard enough to bear the filling. (3) I have capped a number of such exposures, but never removed the filling and capping for the purpose of seeing condition of pulp. (4) I should say that about eighty per cent. were successes. (5) I should say that the younger the patient the better the chance for success.

F. H. LEE, Auburn, N. Y.

(1) Certainly I would, after constructing a safety, pocket, cap the healthy, or sickly, pulp with *arsenic* and creosote. (2) In due time I would remove cap *and* pulp, giving the cavity just a touch of creosote, and then permanently fill. (3) I have employed this *cap* very often, found it very satisfactory, and have had no occasion subsequently to inquire concerning vitality.

J. W. Clowes, New York.

Find but little success in capping any exposed pulp; but still, in cases of slight exposure, cap in hope of keeping the pulps alive for a little longer in young patients. In older ones have almost abandoned the effort, and resort at once to devitalization and filling root and pulp chamber.

J. Allen Osmun, Newark, N. J.

(1) I cap all such cases with thin shavings of dentine, from an extracted tooth, treated with creosote, or with asbestos paper, and fill immediately. (3 No. (4) Sixty to eighty per cent. successful. (5) No.

Wm. N. Morrison, St. Louis, Mo.

I do not think that we can save five in a hundred of freshly exposed healthy pulps by capping; and I do not think we can save *alive* one in a thousand, when the pulp has been congested.

S. C. G. Watkins, Montclair, N. J.

(1) If the pain was slight, of short duration, and exposure small, yes. After the bleeding has ceased, dry out and cover the exposure with a film of collodion or thin chlora-percha; place over this, so as to cover floor of the cavity, a single thickness of No. 6 or 8 tin foil, and spread over it a thin coating of oxyphosphate. (2) Yes; after this has hardened, if no pain is present from the operation, fill the cavity with oxyphosphate, and at a future sitting, some weeks afterward, remove sufficient of the cement to obtain secure anchorage for whatever metallic filling is most desirable in the case. (3) Yes; often. (4) Cannot give exact percentage, but success is sufficient to warrant the trial every time where the exposure is small.

W. T. Martin, Yazoo City, Miss.

If the patient be free from malaria and its influences, general health good, and a person of vitality and resistance, I should not hesitate to cap, and would use oxide of zinc mixed into a paste with glycerine and carbolic acid, equal parts, placed in a lead cap, made by pressing a round end burnisher of size desired in sheet of lead, and trimming with scissors, so that it will rest on either side of exposure. This I settle gently in place without any pressure; I then flow over this phosphate of zinc, of the kind that will adhere to the walls of tooth; allow to harden and cut out, and excavate so as to leave as thick as possible over exposure. I then fill with gutta-percha, and leave this in until I am satisfied inflammation has not ensued, when I will fill with whatever the case demands. (3) Have never removed same filling, but have filled same tooth on another surface sometime after, and found dentine sensitive and showing every indication of a healthy pulp. (4) I should say fifty per cent., as about half give no trouble at all, three-eighths having to be destroyed, and one-eighth being sensitive to heat for several days, gradually passing off and resuming normal condition. (5) I think not naturally, but we generally find more vital resistance in the younger subjects. I find that in persons with exceedingly sensitive skins, that is, where any little irritation will raise a welt, it is useless to try to save an exposed pulp under any condition.

J. H. Allen, Birmingham, Ala.

I do not believe the dental pulp has any recuperative powers. Lymph is absolutely essential to the reconstruction of broken tissue. Histology fails to find these glands in the dental pulp. Therefore, I would not, as a rule, resort to capping. If I decided to cap, I would remove all soft or leathery dentine and sterilize the remainder. Too much stress cannot be laid on this step. 1 to 1000 solution in water of $Hg Cl_2$ is a reliable germicide and non-irritant, if used at proper temperature, about 100 degrees Fah., producing sterilization. I place over exposure one of Leque's cavity disks, held in place with a little balsam impregnated with iodoform; cover floor or bottom of cavity with beeswax warm enough to run off the instrument. Varnish cavity, as fluid of cement will destroy the pulp of any tooth when it comes in direct contact with the dentine. Just give it time; fill with cement mixed soft.

R. C. Young, Anniston, Ala.

(1) Yes; give it a chance. Would try to think of some cap and treatment without a record. (2) Would fill with gutta-percha, and refill if practical, during good behavior. Would not disturb cap unless compelled to do so. (3) Have removed fillings and caps from teeth apparently all right. In a few cases found

the pulp exposed as at first. Oftener found nothing to indicate vitality of pulp or dentine, with the point of exposure marked with a discolored spot; filled without further investigation. Do not think such pulps are in a normal condition. (5) The percentage of success of both the above-named conditions is too small to report with credit for skill in capping exposed pulps. If healthy pulps "scarcely be saved where shall the" diseased and sloughing appear.

S. B. Palmer, Syracuse, N. Y.

I am not a believer in capping exposed pulps, but under the condition you name (that is accidental exposure, with no inflammation) I would not feel justified in "knocking out." I would flow over the pulp a thin cream of pure wood creosote (Morson & Sons, none other) mixed with oxide of zinc, and finish with agate cement, deferring a metallic filling for several months. I now cap no exposed nerves under any other conditions; my experience for a number of years, when I followed that course, having shown me that about 110 per cent, would prove failures.

C. Edmund Kells, Jr., New Orleans, La.

(1) Would cap with gold leaf and fill with oxyphosphate. (2) Would remove part of cement in about three months and fill permanently if the tooth had given no annoyance in the meantime, and responded quickly to heat and cold.

W. E. Pinkham, New York.

(1) I would cap immediately with a paste made from iodoform and 1-3000 bichloride placed over the pulp; immediately over that oxyphosphate. (2) If there is no trouble I fill permanently in two or three months with gold or amalgam.

W. R. Blackstone, Manchester, N. H.

Such pulps may be successfully capped in the majority of cases if great care be exercised in perform the operation; yet many pulps will die if irritated. The physical condition of the patient may be so low that a wounded pulp cannot recuperate, and its death therefore will ensue. (1) I would cap and would use gutta-percha slightly softened by heat, in contact with the pulp, moulding it so that it will lay close to the base of cavity, but not press against the exposed pulp. (2) Upon the gutta-percha oxyphosphate of zinc is placed to form a solid base for the filling. I usually fill the cavity full of oxyphosphate and let it remain several months. If no pulpitis occurs within a year, the cavity may be filled with gold. (3) Yes. (4) Am unable to say just what per cent. of such pulps live, but think that the per cent. of successful cases warrants the practice of capping. (5) I regard youth as a period most favorable to capping pulps, as at that time the pulp is larger and the foramen at apex is larger; so, therefore, the circulation of the pulp is not so likely to be arrested, as later in life, when the pulp and apicial foramen have become constricted. When congestion of the pulp occurs in the teeth of the aged, its circulation is more likely to be arrested in consequence of the very small size of the apicial foramen.

T. W. Brophy, Chicago, Ill.

(1) Yes; if constitutional surroundings are favorable; mercurial, alcoholic and hemorrhagic diathesis unfavorable. Cap with asbestos paper or fine cork touched on under surface with Lano-Creolin ointment. (2) At once, using upper pad of Flagg's hard gutta-percha between cap and filling. (3) Only twice since using Lano-Creolin; pulps alive and painless. (4) Very little success with patients over twenty. Large percentage of failures ten or more years ago, due to rather indiscriminate attempts to follow the fad of the period in capping. Success is due to selection of young pulps, care in manipulation, and nursing of tooth for weeks afterwards by avoiding use. No faith or success in capping aged pulps. Prefer, however, to try all and fail than to use arsenic indiscriminately. Supposed successes may only indicate mummification, and mummies do not tell tales. During la grippe epidemic in Montreal all exposed pulps seemed to resent conservative treatment at once.

W. Geo. Beers, Montreal Can.

(1) Yes; with endeavor. (2) Immediately with trial filling. (3) Yes; inadvertently, with no intention of ascertaining a fact which can be determined by other means. I have any number of teeth whose pulps were exposed and capped, which I know to be alive and healthy. (4) At least 75 per cent. of recent exposures. (5) No; other things are more important.

I endeavor to apply a capping to an exposed dental pulp which will produce no chemical or mechanical irritation to the delicate tissues against which it rests. * * * * My treatment is as follows: The rubber-dam having been applied, open the cavity of decay sufficient for easy manipulation and remove all caries with the exception of that which is not wholly disorganized, immediately covering the pulp. Dry thoroughly with warm air and wipe out cavity with a weak solution of tannin in glycerine, to remove the debris and stop hemorrhage. Follow this with some one of the mild essential oils, then cut a small disk of writing paper sufficient to entirely cover the pulp, and place upon it a globule of Canada-balsam that has been evaporated till it will not run while cold. Soften this by warmth, immediately place over the exposure, and perfectly adapt the paper to place with a ball of cotton wound on a broach and dipped in eucalyptol. This will also dissolve and remove the excess of Canada-balsam. I then cover with thin oxphosphate and leave it for several weeks to test the operation before final filling. If the operation is skillfully performed as above, the space will be entirely filled with a substance that rests against the pulp without pressure, and with a surface that is smooth—slightly antiseptic and absolutely non-irritating to the most delicate tissues. What becomes of the Canada-balsam ultimately, I will not attempt to say, but this I do know: I have pursued this method for nearly twenty years with such results that no record of others, however dark, will prevent me from continuing it.

CALVIN S. CASE, Jackson, Mich.

Societies.

"Wherewith one may edify another."

MEETINGS.

Illinois State Dental Society meets at Bloomington, second Tuesday in May, 1891.

Iowa State Dental Society meets annually. Next meeting in Sioux City, on the first Tuesday in May, 1891.

NORTHERN OHIO DENTAL ASSOCIATION.

THE forty-second annual meeting of this body will be held at Oberlin, O., in the Y. M. C. A. Building, Tuesday, May 12th, 1891, at 10 o'clock A. M., continuing three days. A very interesting program has been prepared, embracing the following subjects, viz.:

"Development of the Teeth," paper by Dr. W. H. Whitslar, of Youngstown, discussion opened by Dr. A. J. Dowds, of Canton; second, "The Recurrence of Decay in Teeth," paper by Dr. J. G. Templeton, of Pittsburg, Pa.; third, paper by Dr. W. H. Atkinson, New York, subject, "Hind Sight," discussion opened by Drs. C. R. Butler, Cleveland, and E. J. Waye, Sandusky; fourth, "Sanitary Condition of the Mouth, and How Best to Maintain It," paper by Dr. J. F. Dougherty, of Canton, discussion opened by Dr. W. T. Jackman, of Cleveland, and Dr. J. H. Wible, of Canton; there will also be presented a number of voluntary papers, incidents of office practice, and several clinics, among which are the following: "A Tin Filling with Gold Facing," by Dr. S. B. Dewey, Cleveland; second, "Electricity Supplemented with a paper," by Dr. Frank Creger, Fremont, O.; third, "Melting an Ingot of Amalgam," followed by a talk on the same, by Dr. J. F. Siddall, Oberlin, O.

This promises to be an unusually interesting meeting and we hope that all the dentists who can will make arrangements to attend and carry with them any new appliances, devices, models of interesting cases, or report of some case in practice.

Any desired information may be had by addressing Dr. Henry Barnes, 106 Euclid Ave., Cleveland, O.

VERMONT STATE DENTAL SOCIETY.

THE fifteenth annual meeting of the Vermont State Dental Society was held in Rutland, March 18–20, 1891. The following were elected officers for the ensuing year: President, W. S. Curtis, West Randolph; 1st Vice-President, G. F. Cheney, St. Johnsbury; 2nd Vice-President, A. J. Parker, Bellows Falls; Secretary, Thos. Mound, Rutland; Treasurer, W. H. Munsell, Wells River. Ex. Committee, E. O. Blanchard, West Randolph; W. H. Wright, Brandon; W. H. Kingsley, Middlebury. State Prosecutor, G. W. Hoffman, White River Junc.

Next meeting to be held in Burlington third Wednesday in March, 1892. THOS. MOUND, *Sec'y.*

MISSOURI STATE DENTAL ASSOCIATION.

The twenty-seventh annual meeting of the Missouri State Dental Association will be held at Louisiana, Mo., July 7th, 8th, 9th and 10th, 1891, at which meeting you are expected to be present and to take part in the proceedings.

Two half days will be devoted to clinics, Wednesday and Thursday. Those having new specimens, models, new appliances and methods, should notify the committe in order that proper mention of same can be made on the program.

Wm. Conrad,
J. W. Whipple, } Ex. Committee.
Henry Fisher,

CHICAGO DENTAL SOCIETY.

At the annual meeting of the Chicago Dental Society held Tuesday evening, April 7, 1891, the following officers were elected for the ensuing year: President, D. M. Cattell; 1st Vice-President, J. W. Wassall; 2nd Vice-President, E. M. S. Fernandez; Rec. Secretary, L. L. Davis; Cor. Secretary, T. L. Gilmer; Treasurer, E. D. Swain; Librarian, A. W. Harlan. Executive Committee, J. A. Dunn, G. H. Cushing, E. Noyes. Board of Censors, B. S. Palmer, G. J. Dennis, R. M. C. Paine.

Thos. L. Gilmer, *Cor. Sec'y.*

BALTIMORE COLLEGE OF DENTAL SURGERY.

The fifty-first annual commencement exercises of the Baltimore College of Dental Surgery were held Monday evening, March 23rd, 1891, at Harris' Academy of Music.

Conferring of Class Honors, Prof. M. W. Foster. First Honor, Frank Cheatham Wilson, Ga.; Second Honor, Oswald Alden Parker, N. S.

Awarding of Prizes, Dr. Fred A. Levy, President Board of Visitors. Operative, John White David, Tex. Most Honorable Mention, Wm. Everette Nye, Cal; Frank William Hill, Iowa. Honorable Mention, Warren Milton Sharp, N. B.; Hermann Reichhelm, D.D.S., Ger.; Andrew Youngs, N. Y. Mechanical, Frank Cheatham Wilson, Ga. Honorable Mention, Charles Burrett, Tarr, Me. Bridge-Work, Josiah Gaston Fife, Tex. Very Honorable Mention, William Dick, Cal. Essay on Orthodontia, Frank Sheffield Morton, N. S. Honorable Mention, Oswald Alden Parker, N. S.

Prizes given, First Honor by Faculty. Second Honor by James Hart. Operative and Bridge-Work, by The S. S. White Dental Manufacturing Co. Mechanical, by Snowden and Cowman. Essay on Orthodontia, by Dr. J. N. Farrar, N. Y.

Graduates: D. L. Aber, Pa.; C. E. Altemus, Pa.; L. D. Archinard, La.; W. V. Austin, Minn.; T. A. Bailey, Ga.; J. J. Battle, N. C.; S. E. Beecher, Pa.; H. I. Beemer, N. J.; E. Bent, Mass.; R. C. Bradshaw, Md.; C. D. Brown, Cal.; J. H. Bulett, J. K. Burgess, Va.; J. F. Butts, W. Va.; J. J. Carroll, W. Va.; W. L. Chapin, Pa.; C. O. Chunn, Fla.; L. M. Cleckley, Ga.; C. G. Colby, Conn.; T. A. Cronin, Md.; F. M. Conkey, Ill.; U. A. Dalton, N. Y.; J. W. David, Tex.; E. C. Deuel, Cal.; J. F. Downs, Md.; W. Dick, Cal.; E. Eggleston, Va.; J. G. Fife, Tex.; J. G. Findlay, Ont.; B. Garner, La.; J. B. Gould, Va.; W. F. Graham, S. C.; H. T. Greenlaw, N. B.; G. Gress, Pa.; E. Hamm, L. A. Hauser, N. C.; S. J. Heindel, Pa.; E. E. Henry, Pa.; R. S. Henry, Md.; F. W. Hill, Ia.; G. H. Jackson, Pa.; W. L. Jones, Miss.; G. Kress, O.; T. B. Leatherbury, Va.; H. S. Lockwood, N. Y.; J. C. Maloney, Va.; E. B. Marshall, Jr., Ga.; G. V. Milholland, Md.; F. S. Morton, N. S.; J. S. McDonald, Pa.; W. E. Nye, Cal.; C. E. Orndorf, Pa.; E. B. Parker, Va.; O. A. Parker, N. S.; J. C. Pfeiffer, Md.; M. W. Rainold, La.; H. Reichhelm, Ger.; C. P. Rice, Pa.; G. O. Roberts, Ga.; F. C. Royce, N. Y.; G. P. Schumacker, Mass.; T. W. Sharpe, Pa.; W. M. Sharp, N. B.; O. F. Sims, Fla.; W. M. Steinmeyer, S. C.; W. M. Stewart, N. Y.; G. E. Stoddard, Vt.; C. B. Tarr, Me.; W. E. Teaseley, Va.; T. K. Tharp, Ga.; R. H. Walker, Va.; F. R. Wilder, Vt.; F. C. Wilson, Ga.; H. Wurzel, Ger.; W. E. Wolfrum, Wis.; A. Youngs, N. Y.

Graduates, 76; matriculates, 224.

MISSOURI DENTAL COLLEGE.

The twenty-fifth annual commencement took place at Memorial Hall, St. Louis, Mo., March 12th, 1891.

Prof. H. H. Mudd, Dean, addressed the graduates as follows:

Gentlemen, graduates of the Missouri Dental College:

You have much reason to be proud of your Department of Medicine. Special training has brought it to its present high position. So great has been the appreciation of this skill that it alone has commanded respect and deference. It is one of the best of the results of the modern idea in educational pursuits. The limitation of educational effort to lines of practical application. So successful has been this special training that the Dental Profession seemed for a time inclined to accept as a practical fact, that the narrow limits put upon a man by such training was an advantage. The liberal culture of the more eminent men in your department, however, recognized the great danger of modern educational methods in perfecting certain faculties at the expense of the general development of the individual. They saw that the dentist should not be merely a mechanic, but that he must be a man something more than a skilled workman. The individual should predominate over his profession. The man must be greater than his work, and the gentlemen who organized the Missouri Dental College fortunately appreciated the value of anatomy, chemistry and physiology, in the education of a dentist. They recognized the danger of the modern tendency to specialism in the education of the individual. They knew that if a man was fitted into a groove, no matter how perfectly he filled the position, that his horizon was narrowed, and that he became dwarfted in body and limited in mental activity. A liberal education broadens the view, multiplies the avenues of growth, and helps to perfect the individual. Individual greatness exalts all mankind. Fortunately we have grand models — Divine and human — as examples. Strive for perfection, for your individual responsibility is great; you are part of a stupendous whole, an atom among millions. You attract and repel, you influence and are influenced by others, and your life belongs not only to you and your family, but to the world and the age. Be careful, then, lest now, in the period of activity, you do violence to the better sentiments of your youth and embitter the memories of the later years of life; for the record of time is surely written in your heart. The giant tree of the forest has inner circles of growth that mark the rolling years. So you will find, as advancing years dull your perceptions, and whiten your locks, that your play and your work have fashioned that inner life into harmony with your daily thoughts and actions. Eminence, then, in special work should not entail loss of power in the individual, but should be the outcome of a liberal education combined with a special effort in a given direction.

You have the honor to enter the profession from a school which was the first one of the United States to recognize in a practical way the importance of the thorough education to be obtained by a union with an established Medical College. With singular unanimity and in advance of the general profession, the Department of Dentistry has reached a high and liberal basis for educational qualifications, and, now demands of all dental colleges an obligatory three years' course. This demand will be enforced throughout the country after the close of the present session.

I congratulate you upon your fellowship in Medicine in the Special Department of Dentistry. Accept this token, then, as evidence of your right and of the belief of the Faculty of the Missouri Dental College in your capacity, to work in the field of dentistry.

The degree of Doctor of Dental Surgery was conferred upon the following named gentlemen:

E. L. Beatie, Mo.; C. L. Brudewald, Pa.; A. C. Bedford, Mo.; M. C. Boswell, Mo.; J. S. Coyle, Mo.; M. L. Cumming, Ills.; C. E. Dungan, Ills.; W. R. Eckle, Mo.; J. B. Harrison, Ind.; G. D. Kennedy, Col.; J. B. Newby, Mo.; J. W. Markwell, Ind.; J. E. Masterson, Tex.; R. G. Porter, Mich.; J. DeG. Peak, Kan.; A. S. Purdy, Ills.; W. T. Rutledge, Mo.; G. C. Schwarz, S. Schrantz, Mo.; C. E. Schumacher, Mo.; O. Settellen, Switz.; H. Saxermeyer, Ills.; J. H. Thiele, Ger.; H. G. Voorhies, Mo.; J. W. Wick, Mo.; J. F. Wallace, Mo.; M. D. Wilson, Mo.; P. H. Winans, Ills.

Matriculates, 90.

Dr. W. N. Morrison, President of the St. Louis Dental Society, awarded the prizes.

"The St. Louis Dental Society Prize."—An elegant gold medal, to William T. Rutledge, D.D.S., receiving the highest vote on final examination.

"The J. W. Wick Prize."—Twenty-five dollars in gold, to

George D. Kennedy, D.D.S., receiving next to the highest vote on final examination.

"The S. S. White Dental Manufacturing Company Prize."—A set of Varney Pluggers, to Reuben G. Porter, D.D.S., excelling in Operative Dentistry.

"St. Louis Dental Manufacturing Company Prize."—A Laboratory Lathe, to James F. Wallace, D.D.S., for the best specimen case of Artificial Teeth.

MISSOURI DENTAL COLLEGE ALUMNI.

The annual meeting of the Alumni Association of the Missouri Dental College was held March 12, 1891, at the College building, corner Seventh street and Clark avenue. Ten new members were elected to membership, including Drs. Newby and Wick, of this city, the others being members of the class of '91.

Officers for 1891 were elected as follows: President, Dr. W. M. Bartlett; Vice-President, Dr. J. H. Prothero; Secretary, Dr. De Courcy Lindsley; Treasurer, Dr. Carl E. Schumacher; Executive Committee, Drs. Bowman, Prosser and Whipple.

During the past year the following Alumni have been lost by death: Dr. Homer Judd, M. D., LaCroix, John W. Forden and Henry D. Field. The following committee were appointed to draft suitable resolutions regarding the foregoing, to be presented at the next annual meeting: Dr. W. H. Eames, A. H. Fuller and John G. Harper. The by-laws were changed, doing away with annual dues.

THE DENTAL PROTECTIVE ASSOCIATION OF THE UNITED STATES.

The impending suit of the Tooth Crown Company in the Supreme Court of the United States will be reached this week; therefore this communication should be read at once by every dentist in the country.

The purpose and plans of the Dental Protective Association of the U. S., have already been explained and are, in brief, to defend its members, without expense to them when we have control of the case, in any suit brought against them under unjust claims of Letters Patent, owned by any corporation, party or person.

The object of this is to show briefly why any dentist, not a member of this Association, must become so *on or before the* 15*th day of May next*, *i. e.*, May 15th, 1891, or be cut off from any opportunity of joining the Association, or from any protection by the Association, in case he is sued under certain Letters Patent, owned by the International Tooth Crown Company, covering dental work now commonly known as "Richmond Crown." Such Letters Patent are now in suit in the Supreme Court of the United States, under a record made, and suit tried by a committee of dentists headed by Dr. A. L. Northrop, of New York City. This case will be tried at Washington, D. C., in a few days.

The Dental Protective Association of the United States, had nothing to do with the making up of this record, but has put in its patent counsels, Messrs. Offield, Towle and Linthicum, of Chicago, Illinois, to argue the case in behalf of the dentists, with the attorney for Dr. A. L. Northrop's committee, Mr. J. K. Beach, of New Haven, Conn.

The International Tooth Crown Company and its counsel speak confidently of winning this case, and if they do they will undoubtedly sue every dentist in the United States who is not a member of our Association.

We do not believe that any member of our Association will be sued by the Crown Company, even if it wins this case. It has not for the last two years sued any member of the Association on any of the forty or fifty patents owned by it, out of the State of New York. This Company has been forced by the Association to dismiss every case it has ever brought against dentists in all parts of the United States, except the State of New York.

Our Association has sufficient proof and evidence in its possession to defeat the Richmond Crown patent in any suit brought against it, even if these patents are now sustained in the Supreme Court of the United States on the present record, but it is not justice to any of its present members that the Association receive or defend any dentist who remains outside until he is sued.

As has been already stated, the benefit of organization is that we can now step forward and defend any member, however humble or obscure, or however remote from the large centers, in any court, on short notice, with full and complete testimony to defeat these Tooth Crown Patents, irrespective of and additional to any evidence presented in the case now pending in the U. S. Supreme Court.

The defense of one of these cases, which no one individual could afford, costs the Association many thousands of dollars and great additional expenditure of time, thought, and energy on the part of your committee, therefore, you can readily see the injustice of a dentist withholding or refusing to pay Ten Dollars, *until he is sued*, and then expecting the Association to defend him.

We do not put our Patent Counsel in the argument of the case in the Supreme Court of the United States with the expectation of entire success upon the record now given, as it is in many respects unsatisfactory to us, but we do so in order to avert other dangers which we cannot explain here, and if possible to save the entire case. As before said, in former circulars, these records cannot now be altered, but the accumulated evidence in our possession will enable us to bring much stronger testimony in a new suit.

1. Remember that the profession has already paid unjustly millions of dollars to the old Rubber Company.

2. Remember that the I. T. C. Co. owns forty of fifty patents.

3. Remember that this is not the only patent company from which the D. P. A. has saved you.

4. Remember that the Crown Co. will probably win the Crown suit as appealed. That a decision from the Supreme Court in favor of the Crown Company does not prevent the Protective Association from trying the same case over again on new evidence.

5. Remember we give you until May 15 to decide which side you will take, that of the dentists of America, or that of the Tooth Crown Co. and other patent claimants.

6. Remember the membership fee is only $10.00 and no annual dues.

7. Remember to SIGN THE BY-LAWS AND SEND WITH YOUR CHECK *or note* and thus save extra stamp and additional correspondence.

8. Remember we would rather have the money than the

note, but when this is impossible send the note payable when due.

9. Remember the funds accumulated are in charge of our treasurer, Lyman J. Gage, President of the First National Bank of Chicago.

10. Remember there are no salaries paid to officers.

11. Remember that united effort means success in its largest sense.

ARE YOU GOING TO HELP US?

All communications should be sent to the Chairman, J. N. Crouse, 2231 Prairie Avenue, Chicago, Ill.

Members should use their utmost endeavors to secure new members.

Books and Pamphlets.

THE INTERNATIONAL MEDICAL ANNUAL AND PRACTITIONER'S INDEX FOR 1891. Edited by P. W. WILLIAMS, M.D., Secretary of Staff, assisted by a corps of thirty-eight collaborators—European and American—specialists in their several departments. 600 octavo pages. Illustrated. $2.75. E. B. Treat, Publisher, 5 Cooper Union, New York.

The ninth yearly issue of this valuable one-volume reference work is to hand; and it richly deserves and perpetuates the enviable reputation which its predecessors have made, for selection of material, accuracy of statement and great usefulness. The corps of department editors in number and ability surpass that of last year. Its numerous illustrations—many of which are in colors—make the "Annual" more than ever welcome to the Profession, as providing, at a reasonable outlay, the handiest and best resume of Medical Progress yet offered.

Part one comprises the New Remedies, together with a Review of the Therapeutic Progress of the Year.

Part II. is devoted to Special Articles on Diagnosis: the first on Deformities of the Hand, and their Diagnostic value in Nerve Lesions; the second on the Character of the Sputum as an aid to Diagnosis.

Part III., comprising the major portion of the book, is given to the consideration of New Treatment; and is a retrospect of the Year's work, with numerous Original Articles by eminent authorities.

The fourth—and last part—is made up of Miscellaneous articles, such as Recent Improvements in Sanitation; Concerning Clymatology and Hygiene; Alcoholic Inebriety, and the results of Asylum Treatment; Improvements in Pharmacy; Books of the Year, etc.

The arrangement of the work is alphabetical, and with its complete Index, makes it a reference book of rare worth.

In short, the "Annual" is what it claims to be—a recapitulation of the year's progress in medicine, serving to keep the practitioner abreast of the times with reference to the medical literature of the world.

Our Aftermath.

"A Handbook of Local Therapeutics" is the title of a work announced for early publication, by P. Blakiston, Son & Co., Philadelphia.

"His Own Medicine," etc.—If every man had to follow his own advice nine out of ten of us would stop giving it.—*Burlington Free Press.*

7th District Ohio Dental Society, Xenia, Tuesday, May 19th, 1891, *one day only.* All members of the profession cordially invited to be present.

Self-sealing fruit jars will keep Melotte's Moldine, or any similar preparation, ready for use indefinitely. The larger sizes may be used for oiled molding sand, also rubber-dam.—W. H. S.

Shaded pink rubber is the latest gum-facing announced in England. It is claimed that its light pink at the necks of teeth and dark pink at the extreme edge of gums gives a translucent effect.

Dr. F. C. Runyan, of Springfield, Ohio, is making a good recovery from the operations mentioned in a late number of the Journal. By the way, the doctor's wife is the author of the clever "Dorcas Pennefeather Papers" which had a wide circulation.

On His Death Bed.—Patient: Doctor, I would be reconciled to death, and would die happy, if I could be assured of but one thing.

Doctor (tenderly): What is it?

Patient (with a sigh): That no committee would be appointed to draft obituary resolutions.

Dr. M. L. Rhein's Approximal Trimmers (S. S. W. 31, 32) are not only excellent for the purpose intended, but make the best amalgam carriers for small approximal cavities in molars, or any cavity difficult of access where it is necessary to carry a small wafer of amalgam, as in repairing an approximal gold filling at the cervical margin of a molar.—W. H. S.

Dr. W. H. Atkinson, whose death April 2, 1891, from pneumonia is noticed on another page of this issue, it seems never rallied since the death from the same disease of his oldest son, Dr. Clinton Atkinson, May 31, 1890. His youngest son, Dr. Will Atkinson, met with a sudden death March 30, 1891, but it was thought best not to inform Dr. A. in his then feeble condition.

DESTROYED BY FIRE.—The building of the Buffalo Dental Manufacturing Company was burned March 10, 1891. The company, composed of Dr. Geo. B. Snow, Dr. T. G. Lewis, and Col. J. E. Robie, lost stock and machinery valued at about $70,000. On March 12th the company was dissolved and a new one organized by T. G. Lewis, J. E Robie, Wm. Gram, Jr., and C. O. Rother, to be known as the Buffalo Dental Supply and Manufacturing Co.

FAME.—

Such kings of shreds have woed and won her,
Such crafty knaves her laurel owned,
It has become almost an honor
Not to be crowned.

—*T. B. Aldrich.*

PRETTY NEARLY TRUE.—First monopolist: "Good morning, Mr. Combine! Nice morning, isn't it?"

Second monopolist: "Yes, so nice that I thought I'd come out and take the air."

Passing Socialist (to his companion): "Hear that, Jerry! He's got everything else, and now he's going to take the air. We're done for, sure." —*Pittsburg Dispatch.*

THE BEAM AND THE MOTE.—If there is one thing more than another, that European editors harp upon, it is the loose use of terms by the American dentist and his utter lack of scientific culture, though giving him credit for great manipulative ability, etc. Therefore we were surprised to see a paper in a late number of a British journal, as read before one of the societies, on "The Treatment of Dead Teeth," and on reading it to discover that he was writing about "pulpless" teeth.

THE TOBACCO NUISANCE.—Our public offices are often offensively redolent of tobacco. People having business there, come in smoking and go out smoking. The habit is extending to customers of stores; even in those frequented by ladies is to be detected the subtle aroma of tobacco smoke. Something will have to be done with this National nuisance. The tobacco users have their rights, undisputably; but the non-tobacco users have their rights also, and it may be necessary to assert them.—*Albany Times.*

[Some dental offices suffer in the same way—nothing personal in this. The odor of stale tobacco smoke and human breath is very offensive, and to many positively sickening.]

THE ITEMS OF INTEREST STILL AT IT.—On page 202 of the April number of the *Items* appears a communication by the writer of this, printed as if original in that journal, whereas it was written in answer to the query of a subscriber of the OHIO JOURNAL and published in the February number of the latter. If a publication copies thus from another an article that has been given or sold to the latter, he is cheating not only the original publisher but his own subscribers as well, who think they are getting new matter. It is no excuse to answer that due credit was given the writer—the writer has no claim on anything after he disposes of it unless so specified at the time. We would not refer to this if it had not become of such frequent occurrence.—W. H. S.

"ALWAYS KEEP UP A GOOD FRONT—If you are down in the world never show it by your appearance if you want to do business. It is an axiom of human nature that people prefer to do business with successful people, or those who have the appearance, rather than with those who are behind hand." The above remarks are from a Broadway manufacturer who has risen from poverty to affluence, and they are worth putting in one's memory. Said he: "Not many years ago when I was flat broke, not one of my customers ever knew it. I spent more money on them, and generally gave out the idea of my success. Had I not done this, but appeared poor and shabby, I would have lost my trade. There is no knowing how far the appearance of prosperity goes. Magnificent offices, a busy place, the indication of wealth all impress a man, and he prefers to do business with you if you have the semblance of success than with a seemingly poorer neighbor."

EDISON DEFINES AMPERE AND VOLT.—The following question was put to Thomas A. Edison by John S. Wise in a recent lawsuit in which Mr. Edison was a witness. The answer by Mr. Edison gives a pretty clear definition of the words "ampere" and "volt" which are much used about this time:

Q. Explain what is meant by the number of volts in an electric current?

A. I will have to use the analogy of a waterfall to explain. Say we have a current of water and a turbine wheel. If I have a turbine wheel and allow a thousand gallons per second to fall from a height of one foot on the turbine, I get a certain power, we will say one horse power. Now, the one foot of fall will represent one volt of pressure in electricity, and the thousand gallons will represent the ampere or the amount of current; we will call that one ampere. Thus we have a thousand gallons of water or one ampere, falling one foot or one volt or under one volt of pressure, and the water working the turbine gives one horse power. If, now, we go a thousand feet high, and take one gallon of water and let it fall on the turbine whdel, we will get the same power as we had before, namely, one horse power. We have got a thousand times less current or less water, and we will have a thousandth of an ampere in place of one ampere, and we will have a thousand volts in place of one volt, and we will have a fall of water a thousand feet as against one foot. Now the fall of the water or the height from which it falls is the pressure or volts in electricity, and the amount of water is the amperes. It will be seen that a thousand gallons a minute falling on a man from a height of only one foot would be no danger to the man, and that if we took one gallon and took it up a thousand feet and let it fall down it would crush him. So it is not the quantity or current of water that does the damage, but it is the velocity or the pressure that produces the effect.

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Contributions.

"A word fitly spoken is like apples of gold."—SOLOMON.

THE SURGERY OF CLEFT PALATE.*

BY B. M. RICKETTS, M.D., CINCINNATI, O.

It occurs to me that simple or compound clefts of the palate, either of the soft or hard tissues, whether tramatic or otherwise, are the most interesting of all the oral deformities coming within the domain of the dental surgeon. That these conditions are overcome with great difficulty there can be no question.

That the dentist's skill has deprived many a surgeon of a fee there can be no doubt. But now, that the relation of the two, together with the advance of artistic skill, especially in grafting and transplanting skin, mucous membrane and bone has become so intimate, we cannot feel but that the dentist's work is secondary at least in the majority of cases.

To make the mouth and its anatomical relations the subject for our text, and to review their various deformities by any cause whatever, would make my paper and reports connected therewith voluminous. Indeed too much so, for the recent work in this line has been so great that the slightest review of the literature pertaining to it would consume too much of the time tended for others.

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* Read before the Mississippi Valley Dental Society, held at Cincinnati, March, 1891.

In consequence thereof, I will confine my remarks to the "Surgery of Cleft Palate" with a few suggestions concerning the buccal and labial regions, especially with reference to restoration by grafting. It is difficult to determine just where the work of the dentist ends and where that of the surgeon begins. However, I don't think that either would be more content than the other to have this work reported in a journal on mechanics.

Any part or all of the hard palate may be wanting with or without its soft mucous covering. However, as a rule, when the hard palate is absent in part or in toto the mucous membrane is also wanting, especially is this so when the perpendicular plate of the ethmoid is absent which is frequently the case. When the soft part alone is involved the rent may be in any direction or to any degree, or it may be absent entire.

Where the deformity of the hard palate is due to injury the difficulty of restoration is not so great, as the requisite amount of tissue is, as a rule, present and even in many cases of congenital cleft the proper amount of bone tissue is present, but the edges are inverted so as to pretty well occupy the nasal fossa. In such a condition as this, that portion of the rolled border may be divided by a saw or forceps, then brought down and sutured in normal proximity by means of silver wire, mounted first by a coil and then by a perforated shot well compressed.

Time for Operation.—This is of first importance and should not be left unobserved, at this time in our remarks, for many times the success of the operation depends almost entirely upon the age of the patient at the time of operation. We take it for granted that all the cases due to traumatism should be operated upon immediately or as soon after the injury as it is possible. In congenital clefts the most desirable time is within the first two weeks, earlier than the first week if possible.

Mr. Marcy was the first to make a trachæotomy so that the patient might respire while the oral cavity was closed, so that primary union might be secured in a cleft of the soft parts. Although this proved successful and the patient recovered with practically a normal palate the propriety of such a procedure is to be questioned so long as results are secured by other means that answer all practical purposes. True, Mr. Marcy has shown us what can be done, but not why it should be done.

To Thos. H. Manley is due more credit than any American for carrying into use the suggestions of Maurice Collis, of Dublin. In congenital clefts, Mr. Collis says, that the intermaxillary segment may be crowded back into position by fracturing the maxillaries. If the septum refuses to yield a wedge it should be removed at the point of junction of the vomer with the ethmoid. The tuft always contains four teeth, the central and lateral incisors. It is this upon which the shape of the mouth depends. The wide deviation of the opposing jaws would render the remaining teeth useless so far as mastication is concerned.

By resorting to the foregoing operation, not only is the shape of the mouth retained or rather restored, but the lateral and central incisors are preserved. It may be necessary to chisel away a portion of the adjacent osseous tissues that close proximity of the parts may be accomplished and union secured. In either event the use of silver wire is indispensable and should be used with great care. I have made this operation three times with most gratifying results in two of them. The other failing to unite, sloughed and was lost. The only modification that I offer is in the plan of making taut the wire which is done by a simple coil of wire mounted by a shot through which a hole has been drilled.

This child was injured about one hundred and sixty miles from this city and was operated upon within twenty-three hours from the time of injury and remained in the house about three weeks. There are few general practitioners or surgeons and still fewer dentists who are not familiar with the deformities due to any cause whatever. As to the cause of these clefts there are many interesting features, it undoubtedly takes place sometime within the first six or eight weeks of fœtal life, just what the cause is we are not able at present to determine definitely, however, those who have been investigating the subject and paying the most attention to it assure us that it is sometime within the first eight weeks of fœtal life. Mr. Ferguson has made some very interesting observations, all of which would require more time than I can give it just now. Now, in order that you may better understand these deformities, and understand what I have to say, and the few suggestions I may offer, I have, with the assistance of an artist, placed on the charts for you these diagrams that we may take them up in regular order, giving you the most common deformities of the hard parts. We have not the time to enter into any special classification other than to classify the procedure of the correction of these deformities as surgical and mechanical.

It is rather remarkable that the majority of clefts are in the female, perhaps 70 per cent.; some authors claim that those persons having cleft palates are sterile, especially women, and others that it is so with men, but we have all known women who have become mothers, and we have all known such men whom we had every reason to believe were fathers.

Now the most common of these deformities are those where the tuft projects with 1, 2, 3 or 4 incisors, but I have seen cases that show the falibility of Mr. Collis' rule that the tuft always contains four incisors. I operated upon one of the cases thirteen months ago, the child at the time of operation being five weeks old. I lost the tuft with all my efforts to save it, perhaps it was due to its pedicel being so small that it was not properly nourished. Mr. Collis' operation was the one that should have been made, as the septum could have been divided without any difficulty, and if necessary, the edges pared and forced upon the sides of the superior maxillary bones, perfect coaptation being secured by means of silver wire. I have made this operation and am sorry that it was not made in this case; however, the child made a rapid recovery with practically perfect result and is now alive and of average size for one at that age. One similar case operated upon by Mr. Collis' plan six years ago at the age of five years is alive and doing as well as though the operation had not been required.

When the septum extends to the alveolar process and the tuft extending beyond this with one or more incisors it is almost impossible to save the teeth, especially if the septum is attached at the alveolar process; however, as we are not able always to determine what the result will be, it is our duty to give the subject the benefit of every doubt, but if in a few years these teeth are inefficient and are not capable of prehension or mastification, then it is time to take them out. The absorption of the process may be partial or complete.

The dentists have been doing such excellent work that we are many times in doubt as to whether or not deformities of the cleft palate should be taken out of their hands, so far as mechanical restoration is concerned. Dr. Grant Mollyneaux, a resident of our city and one of your number, has done more than any of your American brethren in a mechanical way to relieve these deformities. It being necessary that the air passages should be lined with epithelium great difficulty has often been encountered in restoring the soft palate with flaps from the cheek or forehead, one operator has suggested and performed the following operation three times, each time failing, while another operator, of more recent date, had operated once with success. The operation consists in laying the nose entire to either side by a free incision denuding the frontal bone of its integument and periosteum, twisting it upon itself so that the pedicle would not be too tightly compressed crowding it into the nasal cavity, sutured with wire in such a way as to bring the cutaneous surface on the upper side forming the floor of the nasal fossa, while the periosteum forms the roof the mouth. The success of the last operator was undoubtedly due to the fact that he carried with the integument the periosteum. I would not feel justified in placing this operation before you for serious consideration with our present knowledge of these cases and our means of correcting their deformities.

As to the time of operation I think it is conceded that these operations should be made in the first few days of infant life, there are cases where the conditions are such that this may be questioned. Sometimes when we take a child three or four days of age and insert the silver wire or silk worm-gut or even silk or cat-gut, the tissues are so soft that they pull out. But I think the only thing to do is to again give the patient the benefit of the doubt, and while there may be doubt as to its recovery, in the majority of cases it is correct. If they should die we feel that there is not the loss that there would be in allowing the child to reach adult life and assume the responsibilities of such life. Then there are children that fall heirs to property and there are conditions from a medico-legal standpoint, either of which have reasons within themselves for the child living. You all know that there are marriages contracted on the basis of raising children to inherit property. Under these circumstances and on this basis it may be necessary to postpone operative procedures until adult life.

Now, as to the silk-worm gut I have referred to, I will say a few words. Like silver it does not become absorbed, it is the substance which composes the angler's pride (fishing string). It is made from the jelly found in the silk worm and is the substance from which the worm spins its silk. It is drawn out in a thread-like manner, treated to a solution of sulphuric acid which hardens it, and put through various other processes, after which it becomes the substance which you now see. Our own silk worm will not supply a string more than five feet long, while the Asiatic worm gives one as much as thirteen feet in length. As to the mode of bringing the edges together, whether of the hard or soft tissues, I have the means here that I think is better than anything that has been presented to the profession. This coil is one prepared by Mr. Armstrong, of Indianapolis, and called the "Aveling Coil," with which some of you are perhaps familiar. It is a secret process, and yet I am given to understand that it is a compound of silver, platinum and aluminum. It may be used in various things and the substance may be allowed to remain in the flesh indefinitely without giving any serious difficulty.

The instrument that I use in the clefts is what is called a Collin's needle, a French instrument imported, by me five years ago, and which is now becoming quite common, there are twelve needles accompanying it, varying in shape, so that almost any angle may be obtained. The needle once through the tissue and being hollow a silver wire is forced through it by means of a rachet, pulled out to any desired length, cut off and fastened by one of these coils, and afterwards secured by a perforated shot, the wire being soft silver does not permit of the rachet running over it but two or three times, so that it is best to use a new wire each time. I did not expect to give you a very lengthy paper, it was merely to bring the subject before you for your consideration and to give you a thought or two as to what is being done in this line by the every day surgeon, at least by those who pay any special attention to these kinds of deformities. I am satisfied that we have in the operation described by Maurice Collis a very effectual means of correcting certain deformities and I shall give it a trial, I hope at a very early date. I should be glad indeed to get the expression of the various members of this society and to hear their criticisms and get what every views that they may have to offer, or suggestions, or what may enable us to get out of the difficulty which we so often encounter in correcting these terrible deformities.

The specimen that I present to you is the cranium, showing the palate at ten years of age. The bones are not completely ossified, in fact the palate bone is almost separate from the palital process of the superior maxillary bone.

At the age of 5, while sitting in a high chair blowing a tin whistle six or eight inches in length, he fell forward to the floor. The tip of the whistle struck just behind the upper incisors, plowing backward, pulling off the hard palate until the line of union of soft and hard palate was reached, when it was forced up through the soft palate into the post nasal chamber, cutting and tearing its way until the posterior wall of the nasal pharynx stopped its progress. Upon examination a Y-shaped laceration was to be seen pointing forward. The hard palate was found to be penetrated and laceration of soft parts quite severe. All food taken passed upward into the nasal chamber, the liquid portion coming out forward, but the greater portion of the solid food remained in the nasal cavity and soon gave rise to a nasty, foul odor depending upon the subsequent decomposition of it. Chloroform was used as an anæsthetic and silver wire was used as sutures. Considerable difficulty was experienced in finding a needle of proper cure to engage the flaps, as the arch of the hard palate was unusually high. I was finally successful; however, I lost two stitches by sloughing and a second operation was necessary, which gave perfect relief to the child and ended in a perfect cure. Why this tin whistle did not completely detach the bone I am unable to say.

DISCUSSION.

Dr. H. A. Smith, Cin., said his observations had been that in large fissures it was not best to operate early in life as such operations almost invariably affected the voice. Thought it better to wait until adult age was reached and then supply an artificial palate.

Dr. G. Mollyneaux, Cin., agreed with what Dr. Smith had said, and added that an operation in after life only complicated the case and no particular benefit was derived. He thought there was but one possible suggestion to be offered to improve the voice in such cases and that was an artificial palate. He has had complete success with an obturator of his own design adopting the Suersen method of using hard rubber instead of using a soft rubber velum. The hard rubber velum moves upon the metal plate by the elasticity and mobility of two gold bars, one extending an inch or more from the posterior median line of the plate, and the second, one-half inch in length is fastened at one end to the perpendicular screw, vulcanized in the top of the plate and holds the velum at the other end by a similar placed screw soldered to the bar. When the muscles of the pharynx are at rest this velum allows free breathing through the nose, but when the muscles contract in speaking all communication into the nares is cut off and perfect articulation results. [We hope at some future time to illustrate this method of Dr. Mollyneaux's and produce it in full.—Ed.]

SCIENTIFIC INVESTIGATIONS OF THE CRANIUM AND JAWS.*

BY EUGENE S. TALBOT, M.D., D.D.S., CHICAGO.

In a hurried manner I have sketched a few ideas as they have occurred to me in regard to the forthcoming investigation of the jaws of modern and prehistoric skulls. At the last meeting of the American Dental Association, Dr. J. J. R. Patrick, of Belleville, Ill., was appointed to take direct supervision of the work of the examination of the jaws and teeth of the skulls in the different museums in this country. The Association could not have selected a better man. It is quite essential that some one who has had years of practical training like Dr. Patrick in this particular line of work should not only supervise but actually make the examination. From the experience which I have had in the past ten years, in making examination of the work for data that are not so particular or difficult, I have learned, that it is very essential that the work should be done by a man or a set of men of experience and that they should go through all of the museums and superintend personally all the work. These men should be men of experience and integrity whose names connected with any paper would be sufficient guarantee of the accuracy and completeness of the investigation.

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* Read before the Mississippi Valley Dental Society, held at Cincinnati, March, 1891.

I cannot see how it is possible for even one individual to go on with the work until some clear and systematic plan has been devised as a foundation to work upon. This plan cannot be successfully laid out by any one, or ten individuals, for the reason that no individual is able to grasp all the points that are liable to arise in a complete scientific research. This argument is illustrated by the remarks made by Dr. Patrick, showing that even he, with his large fund of knowledge and personal experience, is liable to be misled by some personal view in regard to this matter. Among other things he says on page 70 of the Transactions of the Illinois State Dental Society for 1890: "I received some cuts of the superior maxilla, a full set of teeth, and the writer desired to know the measurement of some of my prehistoric skulls, that is the transverse diameter of the dental arch in the region of the sixth year molars. So far as race characteristics are concerned there can be no object in such an investigation. And so with the depth of the palate, etc.; all these measurements are futile for a number of reasons which it would be occupying too much time to consider." Now, while these measurements may not be of any value so far as race characteristics are concerned (which I will not admit), yet it is just as essential that a very accurate measurement should be made across the upper jaw in the region of the first permanent molar as any other examination of the mouth or jaw.

It is barely possible that Dr. Patrick has certain reasons for thinking that these measurements are not necessary and yet it is possible that some one might require these particular measurements in the near future and find upon examination of the report that they had not been taken, thus necessitating the work of going all over the ground again. This state of things has already occurred in the very laborious and exhaustive report of Dr. Betty. After Dr. Patrick has received suggestions from the dentists, he should compare them with his own views and then publish his chart in the leading dental journals at intervals, for sometime, inviting criticisms in the journals from the dentists so that these criticisms may be read by all. In this way the views of those interested in the original investigations can be recorded. The suggestions that are of value can be added to the chart and such points as are not of material use can be discarded. In this manner a tolerable accurate chart may be produced.

All the measurements across the superior maxilla up to the time of Dr. Betty's examination, were made from first molar to first molar. What motive could have induced Dr. Betty to make a change and measure from third molar to third molar I cannot understand, although he may possess good and sufficient reasons for so doing. I shall have occasion to use the measurement from first molar to first molar in a paper I have been collecting material for, during the past ten years. I congratulate myself that a large expenditure of time and money was saved by the work already done by Dr. Betty. I now find that unless he can show that his plan of measurement is the better one, I must go all over the work again thus causing considerable annoyance to the officers of the museum. Years ago the late Dr. John Mummery recognized the fact that the only parts giving a true and accurate development of the jaw was at the anterior root of the first permanent molar and this is very natural. The first permanent molars are the only teeth that erupt normally and are not influenced by the other teeth. They are the teeth by which most of the work of mastication is accomplished and therefore the jaw is better developed at that point; the roots of the teeth give a very accurate point by which to obtain the diameter of the jaw, while on the other hand the third molars never erupt normally, they are creatures of circumstances, sometimes erupting outside of the alveolar process, sometimes inside, again in the centre of the process, being always at the mercy of the second molar teeth.

The third molar always erupts after the jaw has developed while the first permanent molar erupts before the development of the alveolar process and is carried undisturbed laterally with it. Again, the alveolar process of the extremities is always influenced by the surrounding parts, the divergence of the wisdom on the lower jaw, the tongue and the cheeks, while the first permanent molars are always held in position by each other. Frequently one wisdom tooth or both are missing and in that case it would be impossible to get the measurement. Some one will say that this is the case with the first permanent molar; so it is, but the second molar in that case will answer the purpose if it moves forward and fills the space made vacant by the extraction of the first permanent molar, when a nearly accurate measurement is as readily obtained; the buccal roots of this tooth giving the precise diameter of the jaw at the time the measurement is taken.

The diameter of the jaw at the location of the second molar, when all are in place, is greater than the diameter at the first permanent molar, so that if the first molar should be removed the second molar coming forward will occupy about the same position in the jaw that the first molar did.

I consider the antero-posterior diameter of as much importance as the lateral diameter provided a large collection can be made so as to obtain the average excessive and arrested development, and the premature extraction of teeth goes far toward interfering with the true character of the jaw. The forward movement of the teeth as a result of the above mentioned causes is bound to effect a true solution of race characteristics. Prognathism of either the upper or lower jaw frequently results from abnormal development of the opposite jaw, resulting in a local cause. Again the constant extraction of the first permanent molar or want of eruption of the third molar would preclude any attempt on the part of the investigator to make an accurate investigation.

As Dr. Owen is able to classify some of the lower animals by the antero-posterior diameter of the jaw, so may we with proper measurement, be able to add materially to our knowledge of races by this means. Dr. Patrick also says on same page: "With regard to measurements of human crania. This has puzzled the brain and ingenuity of physiognomists and craniologists for the last 150 years. They have arrived at no reliable data in regard to the relative size of the cranium and face bones. Measurements of crania amount to comparative nothing as designating brain capacity or race."

I quite agree with the doctor so far as the measurements of the cranium are concerned, but should we, as dentists (specialists), who are supposed to be familiar with the bones of the cranium, become so narrow in our investigations as to confine ourselves in a scientific study of so much importance as this is, to nothing but the teeth? I had always supposed from his writings that Dr. Patrick was a broad-gauged scientific investigator, not only in craniology but also in osteology, and that he, above all others, with his vast knowledge of craniology, would for his own benefit, if not for the general public, wish to explore the whole field and show to all scientists that this commission appointed by the representative body of dentists, was able to place new facts and new data before the world so that physiognomists and craniologists the world over can look upon the report of the committee as not only final, but display such a fund of information that the scholars of all countries will look upon it as a piece of masterly work. That physiognomists and craniologists have not made headway in the past 150 years is true. And why have they not made headway? Simply because the starting points for the measurements were not accurate to commence with. For instance, take the facial angle.

Different authors possessed different notions in regard to what the facial angle should consist of. In Camper's angle the facial line is drawn between the most prominent points of the forehead and lower face, the basil line from the centre of the external auditory meatus through the anterior nasal spine to meet the first. In Cuvier's angle, the two lines start from the same point to meet at the tip of the incisors; in Cloquet's, at the center of the superior alveolar border; in Jacquart's, at the anterior nasal spine.

The Munich-Frankfort angle (adopted at the .craniometrical congress at Frankfort) takes the facial line between the supraciliary depression and the most prominent part of the alveolar border of the superior maxillary; the basil line is the so-called horizontal line drawn between the upper border of the external auditory meatus and the lower border of the orbit.

Topinard's angle has a facial line drawn from the supraciliary depression to the most prominent part of the lower face, and a basal line in the plane tangent to the occipital condyles and upper alveolar arch. It will be noticed that most of these authors take for their starting point the external auditory meatus, drawing a line to the nasal spine, and yet all are at variance in regard to what the other points shall be. It seems never to have occurred to these men that the bones of the body never develop in harmony with the opposite sides or that the bones of one individual may not develop like those of another individual. I have seen people with one ear higher than the other—others with eyes higher or lower in the head than normal, or one eye higher in the head than the other; others have jaws either anterior or posterior to the normal position. The same is also true of the nasal spine. We frequently observe the nasal bone projecting or receding owing to the period of development and ossification of the bones at the base of the brain. How frequently we see excessive development and a want of development of the supraciliary ridges, as well as the anterior alveolar processes. A line extending two to four inches from any one of these points would necessarilly make a vast difference in the shape of the calvarium.

It is a singular fact that less is known of the development of the osseous system than any other part of the body. In my investigations upon this subject I had occasion to go through the Army Medical Library at Washington and the only mention of this subject in any language consisted of twenty-four cases of excessive or arrested development, in connection with patients who were otherwise deformed; these were only mentioned in a general way. A small work upon this subject has been published lately by Dr. Sutton, an English author. It is very elementary although exceedingly interesting.

Dr. Patrick also says: "I care not what race of people you might come in contact with, however isolated in any island in the ocean, you could not find eight crania but would be different in shape and size from each other." In this statement, Dr. Patrick is quite correct.

One of the most complete, scientific and well-classified museums in Europe is that located at Wiesbaden, Germany; each room is numbered according to a special period in the world's history and anything of interest that could be obtained in relation to that particular period has been placed in that room in the natural position in which they were found. The first room contains relics pertaining to the Glacial period and bronze ages. Among other things side by side are two skulls, one Brachycephalic, the other just the opposite, Dolichocephalic, thus showing that from the earliest man the shapes of the head differed.

Pages could be written about these two skulls alone. I have always observed that in the brachycephalic skull the upper jaw like the skull is always broad, as in the form of the jaw of the Chinese; while the dolichocephalic skull has a long, narrow jaw as observed in the negro. Notwithsanding all these differences in points of measurements, a good deal has been accomplished by craniologists. There is no class of men so capable of working out a new system of measurement of the skulls and establishing definite points as the dentists, and the present opportunity is one that seldom comes to a man whereby he can make a name for himself. It only requires thought, inventive skill and well-directed efforts to study out a plan which shall be superior to all others for the accurate measurements of the cranium and jaws.

Another point in Dr. Betty's paper. Dr. Black on page 75 of the Transactions of the Illinois State Dental Society, says: "I have not counted the irregularities in the individual skull, but in 150 Mound Builders there are 45 cases of irregularity or 30 per cent.; in 145 Indians, 16 cases of irregularity or 11 per cent." It is very essential for us to know whether these cases are the result of local causes or whether they are of constitutional origin. I have since gone over the tables of Dr. Betty and have found that only three can be considered constitutional—that is, irregularity resulting from arrest of development of the jaw. All the others are of local origin. I doubt if there is any other point in the whole investigation that is of more importance to us or to future investigators than the knowledge of excessive or arrested development of the jaws. We would expect to find more local irregularities of the teeth among early races than among the present people, because at that time the knowledge of the care of the teeth was limited, and the temporary teeth which were allowed to remain in the mouth until forced out by the second set, frequently caused the second set to rotate or to be forced out of their normal condition. Another point is as to whether a skull is that of a male or female. Dr. Patrick says: "There is no male or female skull." In this I think he intends to say that it is quite difficult to distinguish a male from a female skull. That there is quite a difference in size and shape every one will admit.

Let me ask what will all the investigation amount to if, after the committee finishes its work, it is unable to classify the skulls into male and female? The influences which produce decay of the teeth are not the same in the male and female. The jaws are smaller in the female than in the male. The diameters of the cranium, the weight of the brain, are known to be less in the female than in the male, and I should expect to find a difference in the shape of the jaws if a close inspection were made. It is known that the sutures of the female skull are more prominent than those of the male. The discovery of these points by some dentist whereby he can easily determine the sex will certainly add credit to his name.

DISCUSSION.

Dr. J. J. R. Patrick, Belleville, Ill.: The paper just read is more in the nature of a criticism on the investigation that is to be made under the *protection* of the American Dental Association, than a scientific treatise. I therefore feel compelled as curator for the investigation to ask the author of the paper to explain a few paragraphs that appear to me ambiguous; while others require a further elucidation before I can open the discussion.

The paper is entitled, "Scientific Investigation of the Cranium and Jaws" (presumably Human). The title of the paper requires that nothing but a careful classification of existing facts and their relations to each other should appear; for the questioning spirit of science demands facts, numerous and plain, and the conclusions from them inevitable. Facts must precede all theories, all attempts at exposition; the verdict must come after the evidence, and not before it.

Now, therefore, in the interest of science, it seems to me proper that the essayist answer the following questions: 1st, Have the advocates of the measurement of the jaws discovered in such measurements anything that will be of service to the profession, or a promise of service? anything that will prove or disapprove theories regarding the development and diseases of the jaws and teeth of the human subject? Have they discovered a cipher by which they can decipher the laws governing variation in animal forms? If they have, it is their first duty to establish the truth of their cipher, and not precipitate a debate on it. I am in search of facts not theories.

2nd, That the anterior roots of the first permanent molars should be the only parts giving a true and accurate (measurement) development of the jaws and be recognized as a fact by the late Dr. Mummery requires further elucidation, and cannot be dismissed by saying "that it is very natural," for it is just as natural that it should not as that it should be recognized as a fact.

Again the essayist says: "The first permanent molars are the only teeth that erupt normally." Am I to understand that all the rest of the permanent teeth are erupted contrary to system or law-abnormally? Does the essayist mean what he says when he asserts that the third molar erupts after the alveolar process has developed? while the first permanent molar erupts before the development of the alveolar process? The sixth year molars being teeth by which most of the work of mastication is accomplished and the jaws better developed in the region of the sixth year molar on that account. This statement needs verification. If the essayist means that the sixth year molar when retained, is longer in use than any other tooth of the permanent series in the human subject, this statement would be correct, but that it is more useful in mastication than any other tooth of the same series would be equivalent to saying that the legs were more useful than the arms, seeing that each tooth has its special use and office.

3rd, I desire to know who that Dr. Owen is who was "able to classify some of the lower animals by the antero-posterior diameter of the jaw." A reference to his work or paper on the subject is desirable.

4th, The essayist says; "It is a singular fact that less is known of the osseous system than any other part of the body." Is it possible that anatomists and physiologists have neglected the substructure upon which the superstructure depends? Have the following authors and original investigators lived and toiled in vain?

Mizand, French physician, 1550, On the growth of bones.

Belchier, English surgeon, 1700, On development of bones.

Duhamel, French surgeon, 1739, On the growth of bones and the teeth.

Hunter, 1755, On the development of bones.

John Goodsir, 1839, Origin and development of the pulps and sacs of the human teeth.

M. Flourens, 1846, Researches on the development of the bones and teeth. "Matter changes and is renovated incessantly while form and force persist."

George Murray Humphrey, Esq., M. B., F. R. C. S., 1858, A treatise on the human skeleton including the joints.

James Salter, M. B., 1861, On the structure and growth of the tooth of Echinus.

George W. Callender, 1868, On the formation and early growth of the bones of the human face.

Richard Owen, 1868, Comparative anatomy and physiology of the vertebrates. Odontography.

Blake, Fox, the Monroes, Oken, John J., Charles Tomes, Knox, John, Charles and Thomas Bell, all original investigators on the osseous system.

Hippocrates: "Medicine hath of old both a principle and a discovered track whereby in a long time many and fine discoveries have been discovered, and the rest will soon be discovered, if any one who is competent and knows what hath been discovered, start from these data on the search. But whoever rejecting these, and despising all, shall undertake to search by a different track and in a different manner, and shall say that he hath discovered something, will be deceived himself and will deceive others."

Now in the name of these immortals, these workers in the field of original research, I protest against which statements being made unsupported by the slightest instance or evidence.

Bertillon method is a method of measuring certain portions of the body of known adult criminals in order that they can be *reidentified*, and not that the methods of measurement first used and introduced by Bertillon are methods of measurement by which the tendencies to criminality may be revealed.

Dr. Talbot: This is the kind of discussion I like. Dr. Patrick brought out the very points I wanted. The first molar is the first to erupt, and changes less than any other of its class. The third molar seldom develops normally. The first molar is the only tooth which develops normally. The jaw is growing smaller every day.

Dr. Patrick: The teeth are the most important clue as to the kind of animal. Dr. Betty has done the best work of the kind up to date. The skull of the female has no distinguishing characteristic; it is always in proportion to the skeleton.

Dr. E. G. Betty replied that since Dr. Patrick was in search of facts he had given some. He undertook this investigation under many difficulties, and his efforts were curtailed by the work done by craniologists employed by the government. Some one had to do this work, and he, while opportunity, time, and means were at hand, undertook it.

Prosthetic Dentistry.

[This department will be devoted exclusively to Prosthetic Dentistry, including Crown and Bridge-Work. We shall be pleased to receive from our readers such practical contributions, short items or queries upon this subject as they choose to contribute.]

TWO OR THREE THINGS.

BY PROF. L. P. HASKELL, CHICAGO.

Dr. Genese is correct in saying, in reply to Dr. Billings' statement that tin makes a lead die *softer*, that he is mistaken; it does make it harder, and while that is true it is not the only reason for its use, but to reduce the melting temperature of the lead so it can be poured upon Babbitt metal. But I do not agree with Dr. Genese as to the desirability of lead alone for the counter. It is *too soft* and is benefited by the hardening process. I now see why Dr. Genese prefers zinc. I should if I was swaging cast iron. I prefer and always use 20 karat gold, and studiously avoid any admixture of iridium or platina. There is no necessity for their use except in clasps, and it is far more difficult to swage, and the plate is more liable to spring.

I am quoted in the *Archives* as saying, that I recommend students in the colleges to use platinized silver instead of brass. Not exactly, but to use platinized silver for *partial* cases instead of rubber in *practical* work, as it gives the needed practice in metal work; and also to use aluminum for full plates instead of rubber for the same reason.

Some writers, and notably one in the *Dental Review*, in criticising my exclusive use of Babbitt metal, seem to think I have had little or no experience in the use of zinc. During my first five years of practice, and while he was a child at his mother's knee, I used zinc, as well as tin, and type-metal. I, yes, I have had all the experience I desire in that line.

RESETTING TEETH.

BY E. H. RAFFENSPERGER, D.D.S., MARION, O.

We are frequently required to reset the teeth of a rubber plate on a new plate of the same material, and a more disgusting and nasty job is difficult to imagine, that is, if we practice the old method which consists of going ahead exactly the same way we would in making a new denture, taking "bite," making "trial plate," etc., which requires the same time and labor, and as we generally get only half price, these two items are to be considered.

I have been practicing for sometime a method somewhat different, and find it a grand improvement, certainly in time and labor, whether it is original or not I cannot say, but I never saw or heard of it.

Take a full upper denture, for instance, gum teeth. The plate has been worn a long time, and is so "loose" that the patient can hardly keep it in the mouth. The articulation being correct, I take an impression of the jaw the usual way, run the cast as usual; I dismiss the patient until the plate is finished, all I need is the impression. I now take a fine saw and cut out all of the palatine portion of the plate; cut as near to the pins as possible. I also file away the rubber rim above the gums, file clear down to the gum sections, this leaves the teeth all intact on a thin band of rubber in the shape of a horseshoe, this I put on my cast, it will only go on one way, and that is the way it was worn in the mouth. I then wax up as usual and flask; in flasking, the plaster must only be run to the gum sections so the teeth will all stay in the upper part of the flask. The flask must be heated before it is opened. After it is opened the teeth will all be found in the upper part together with the old rubber. After picking out all the wax, boil the upper part of the flask for sometime, then take out and with a pair of pliers take hold of the rubber at the heel and pull it away, it will come in one piece. The teeth remaining imbedded in the plaster, leaving the teeth and pins nice and clean and *no odor.* The piece is now "packed" as usual. Try this plan and note the saving in time and labor, to say nothing of the nasty smell which the old method always caused when the teeth were taken off of the plate.

SUCTION CELLS, &C. *vs.* NONE.*

BE WILLIAM WALLACE, M.A., M.B., C.M., L.D.S., GLAS.

After some preliminary observations Mr. Wallace said ; Let us first turn our attention to the terms at present applied to these devices. They are called by such various names as—suction cell, suction valve, vacuum cavity, and by simpler and more abstruse words. Now had these different names denoted one and the same thing, and could this have been shown to be what was universally used to support upper plates, then we should have been about arriving at a wished-for conclusion. But we are at once deterred from doing so because the kinds of things to which these names are applied are not one thing, but are even more numerous than the names themselves. A collection of specimens of the different kinds of air-chambers — for we will apply this name to the whole class that have been invented — would doubtless be curious, and some serial remarks upon them might have been instructive. But instead of the collection and the serial remarks we will make a few reflections on the names of these devices.

In calling them vacuum chambers very little respect has been made to the natural use of language. Had these air-chambers been vacuum chambers the palate would have had to withstand a force equal to that which would sustain a column of water thirty-two feet high, and in cross section equal to the area of the air-chamber. Now, this would be intolerable could it be effected, but it is impossible to obtain a vacuum cavity in such a situation, for the mucous membranes are saturated with and constantly supplied with gases from the blood, so that so long as the circulation continued there would be a supply of gas to the cavity.

Now is this air-chamber a suction cell as it is sometimes called ? If suction be exerted on the surface of a mucous membrane the gases and fluids are withdrawn to an abnormal extent and the solid tissues also gradually yield. And this action being continued the tissues become diseased and the cell becomes filled with hypertrophied tissue. It is obvious that when the cell became filled with tissue no more suction could be exerted, as suctions depend on the rarification of air in this case.

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* Read at a meeting of the West of Scotland Branch, held at Glasgow, Jan. 22, 1891

It is scarcely necessary to add that the suction valve is also a misnomer. The valve by presumption lets air out of, but not into, the chamber. The buccal and respiratory muscle supply the force by which the air is exhausted, so that if the valve acts as it is supposed to, the whole mechanism deserves the name of an air pump. It must be admitted, at least, that a valve cannot exert suction, and that these two words are unhappily united.

That there are a number of different kinds of air-chambers in use shows that even though they may originate from a true idea of what is necessary there is a difference of opinion as to the precise form it should take. This difference of opinion shows that the idea is not thoroughly grasped or understood; but since some hold that the practice of making air-chambers is based on a misconception, we see a special reason why there should be disagreement as to how the chamber should be constructed. Many have contended that the continued use of an air-chamber depends on the fact that it tends to correct a fault which all but constantly creeps into upper dentures when made without them.

To elucidate this statement it must be remembered that in making this class of dentures the following conditions are present. That there is a hard ridge in the median line of the palate, that this ridge is always harder than some, and sometimes, than all of the rest of the tissue of the palate. From this reason a plate may be made to rock in proportion to the amount that the other tissues of the palate yield more than the hard median part. And that when an impression is taken the pressure is greatest furthest away from the edges, that is, about the centre of the hard palate. The very reverse of these conditions insure the stability of a denture. In fact, the one illustrates unstable, the other stable, equilibrium. But with so much constancy do these untoward conditions supervene that by relieving the pressure over a given area in the middle of the palate the plate comes to lie with greater stability in almost every case. But stable equilibrium may be obtained without making a special cell, but by merely altering the model in such a way that the pressure is thrown off the centre on to the margin of the plate, off the centre of the palate on to the alveolar ridge. This may be done either by reducing the height of the alveolar ridge in the model or heightening the level of the palatal surface, especially along the median ridge.

We have now then arrived at the principle of first import in the art of securing the stability of upper dentures — to wit, to make the circumference and not the centre of the plate the part which rests firmest against the palatal tissues, and on which force is exerted during mastication.

So in showing how plates can be constructed without air-chambers, we see at the same time how tbeir presence seems to be beneficial. We may look at the phenomena which supervene in cases where air-chambers are worn, and further point out their want of utility.

The natural action of the tongue on the palate is removed, and that part of the palate which is co-extensive with the air-chambers, having no pressure exerted on it, tends to protrude into the cavity. But this is not the main cause of the growth of the palatal tissues into the cavity. The latter becomes the receptacle of mucous secretion and food debris, which in time causes more or less irritation to the mucous membrane. The irritation leads to chronic inflammation and hypertrophy. Sometimes from the lateral movement of the plate the edge of the chamber bleeds the tender mucous membrane, sometimes general inflammation of the whole palate sets in to such an extent as to become disagreeable. Often without giving undue trouble the cavity becomes filled with soft, more rarely with hard, tissue. Such phenomena are claimed as advantages by some. For example, a contributor to the *American System of Dentistry* says, "the mucous tissue drawn up into the cavity assists very materially to steady and hold the denture in position." This is making the palate fit the plate, not the plate fit the palate. Similarly, Mr. Fletcher once advocated a similar indirect method to obtain a favorable result. For difficult cases, *i. e.*, for small, flat, dry and hard palates, he made the palatal surface of the plate with many hundred small hemispherical indentations, or as he called them, small vacuum cavities. Then he says: "Of course in time the gum grows up and fills these, as with all other chambers; but this is not the slightest objection, as the rugæ produced by this means gives the resistance to side motion, which is the first necessity in the retention of a plate in the mouth with comfort."

It is occasionally the case, and some dentists make it a professional expedient, to make the patient, by dint of perseverance, wear a plate that did not fit originally. In these cases there is general inflammation of the gums and palate, until at last the plate sticks to the palate in its altered state. Yet the patient may not complain—nay, even be quite pleased and contented with it. This is merely an extreme case of the indirect accommodation we were speaking of, and is merely working on the plasticity of the patient's mouth and perseverance.

The problem how to retain an upper plate in position is purely a dynamical one. What, then, are the various factors that contribute to the result? We have pointed out that stable equilibrium is obtained by the circumference of the plate pressing hardest on the palate and alveolar ridge, and this is the condition most essential to mastication. This equilibrium being secured, the tenacity with which the denture clings to the palate is of practical value if it merely keeps the plate from falling. The normal action of mastication tends to drive the plate towards the palate and beyond the stability that pertains to the subject we are dealing with. The plate adheres to the alveolar ridge and palate from various conditions and forces. The plate may catch over the outer margin of the alveolus and thus obtain a mechanical grip of the upper jaw. The forces which we will now mention would in such a case be acting also. If the extreme edges of the plate fit tightly to the gums, downward traction on the plate is resisted chiefly on account of suction; to this may be added the stickinesc of the saliva and cspillary attraction. All these forces act best when the plate fits closest at the edges and is freest in the centre, but not so free as to permit the inclusion of any air when the piece is pressed home. That there should be no air between the palate and the plate in any place follows from the following law concerning gases. That the volume of gases varies as the pressure. Now, when we relieve the pressure of atmosphere by dragging on the plate, the air in the cavity expands without opposing the force; but had the cavity been filled with, say, glycerine, or had there been no air-chamber, the expansive force of the air contained would need to have been exerted to remove the plate.

Whether the practice of inserting air-chambers in plates is increasing or not I can hardly say; but I find that those who express their opinion are in favor of discarding or limiting their use. With a single exception, however, I have failed to discover that that area in which the cell was situated became at the same time the place where the force was exerted by which the plate was retained. The cell with the sucker-like disc in it is the exception. But the drawbacks to the contrivance do not warrant its use.—*Jour. Brit. Dent. Asso.*

READY MADE AMALGAM CONTOURS AND CROWNS.

Dr. Arkovy says: All kinds of artificial crowns—entire or partial—require for insertion some foreign filling material, viz., amalgam, cement, or gutta-percha; while the ready made amalgam crowns and contours unite exclusively with amalgam filling, only that is their own body and amalgamation between crown or contour and filling cannot be but perfect.

His directions for the use of ready made amalgam contours and crowns are as follows: (1) Take impression and bite from the prepared tooth, and selecting the anatomically suitable amalgam crown, have it fitted, in your laboratory, to the model somewhat lower than articulation requires, 1 millimeter will do. If one part of the crown is wanted, have it cut (by a thin saw) and filed as required and the hollow (inner) part provided with retaining pits or deep undercuts (Arthur disc). For contouring purposes, the molar crowns may be cut into two or four, the premolars into two or three segments, reserving the part not applied for another suitable case. Time improves hardness, and air has no deteriorating power upon the crowns.

(2) When starting for stopping, put the piece (crown or contour) into chloroform in order to get rid of fat possibly sticking to the mass. The amalgam for the filling being prepared, take a small quantity of it with the addition of one small drop of mercury and rub that in with a polisher upon the surface furnished with undercuts. Now go on to fill the amalgam into the cavity (with or without coffer-dam) to the level of the borders, covering these as well; then put the amalgam crown or contour upon the filling, pushing the piece with your two forefingers several times in labio-lingual direction until it will attain to its proper position. No hard pressure to be exercised upon contours their body being too weak; entire crowns, however, ought to be pressed firmly by finger or a wood-rod. After that polish, take off *very carefully* the rubber-dam, if in use, and push a small piece of letter-paper between contour or crown and proximal surface of next tooth, in

order to keep the piece in place. For fixation of entire crowns rubber rings may be used, or any means applied which may be deemed fit for the case. For entire upper crowns it is advisable to drill cautiously through the mass (crown fissure), for the amalgam filling will easier keep them in place and counterbalance their dropping before setting ensued.

In that period special care is wanted for exclusion of moisture, for leaving no space between piece and tooth, for saving the ready work whatever unnecessary movement either from the part of the operator or patient.

(3) Setting requiring at least four hours, the patient ought to be requested to take that into account. After the elapse of that time remove paper wedge, and the finishing will be effected by lava strips drawn through the interspace upon the cervical part, circular brush dipped first in solution of alcohol then in pumice stone powder. The best plan is to finish and polish five hours after operation or the next day. Dissuade mastication on that side for two or three days. As to amalgam, any preparation may be used, even copper amalgam as a combination on the cervical border of the cavity, or alone. In the latter case at least eight hours would be required for setting.

CROWNS.

In making and attaching artificial crowns to natural roots there a few requisites, which seem to me very important to follow, and with them let each man work according to his own skill, and the difficulties that each case may present.

First of all the root to be crowned should be in as healthy a condition as possible.

A band should be fitted just loose enough to permit its removal without force, and it should answer for or take the place of an artificial enamel in its shape, thickness and depth underneath the gum around its circumference and smoothness of surface. Care should be taken, nevertheless, to tighten the alveolar edge of the band by means of concaving pliers, when the work is all finished, just before it is cemented on.

An artificial crown should touch its adjacent teeth on both sides and at a point near its masticating edge or surface.

The articulation should be easy enough to let a strip of thin paper be drawn through. This will prevent an overpressure, as a crowned root invariably elongates.

The cusps of a gold crown should be thick, so as to permit grinding if it becomes necessary after a time.

When porcelain teeth are used in combination, the English teeth are preferable; they can be ground and polished without detriment. Also, if they are heated slowly, and allowed to cool gradually, they will not change color.

22 carat gold, 28 or 29 gauge, should be used for bands. Pure gold is very desirable for backings. It is best to back a tooth with pure gold. Flow 20 carat gold solder on it, and then regrind and proceed with the work. I prefer using 20 carat gold solder through all crown-work.

In crown and bridge-work, modelling compound is preferable for taking impressions. Equal parts of lake sand and plaster-of-Paris makes the best investment material I know of. It stands heat without cracking to pieces, and makes a hard model for articulating.

And last of all, gentlemen, take time to make a crown well, and you will save time by doing so.—Dr. Fernandez, *Review.*

A RESETTING METHOD.

We often have patients whose teeth become loose and need resetting, but they do not like to have it done as they have become used to the expression of those they are wearing. The work can be easily done and the same expression retained, as follows: Take an impression and make a plaster cast as usual; put the old plate on the cast and fasten it firmly with Fowler's Sticky Wax; next fasten the cast in the articulator, as usual, for a bite; after the plaster is set, take a sufficient quantity of modelling compound, soften thoroughly and fasten it to the other half of the articulator, make the top surface smooth, and have it high enough so that when the articulator is closed, the teeth will bed themselves full length in the compound.

The compound should be softened in hot water, and the work done quickly, so that the teeth can be closed in without much force. When set, open the articulator carefully, drawing the teeth out of their places without breaking or displacing, remove the plate from the cast, take off the teeth, and arrange them in their order on a strip of wax. Now take the four incisors and place them in their respective places in the bite; close the articulator on them; with spatula and wax fasten them in their places to the base plate; when set, open the articulator and proceed as before, until the teeth are all mounted.

If the teeth need to be a little longer; (that is, show more in the mouth) after you get the bite, open the articulator with the set screw enough to give the extra length desired.—Dr. Steele, *Items.*

TO ACCURATELY ADAPT A LOGAN-CROWN.

If time will permit, pack into the canal and over the end of the root gutta-percha, to remain a day for pressing away the gum; shape the root so as to require no further trimming; grind the crown to an approximate fit; place softened gutta-percha (or modelling compound) about the pin; press, with force, the crown into place; and, after a moment, carefully remove it. You have now an accurate impression of the face of the root, with its peripheral line well defined.

Upon your glass slab build up a little cone of plaster-Paris, and stick your impression into it; separate carefully, and you will still have your impression intact, and a plaster model of the root, giving the relation of the pin. With a corundum wheel grind away, both together, the gutta-percha and the crown to the peripheral line; remove the balance of the gutta-percha; deepen the pin hole; try crown upon model; grind to as close a joint as the eye will allow; paint model with coloring matter; try crown; grind away the colored point; repeat until a close joint is secured; make a final test with coloring matter upon the root. A second model will show more definitely where the nice grinding is to be done.—W. C. Wardlaw, D.D.S., *Headlight.*

TO OBTAIN PROPER OCCLUSION FOR GOLD CROWNS.

After placing a suitable ferrule of gold on the tooth or root to be crowned, see that the gold will not interfere with the proper closing of the teeth, but rather have it a trifle too short, so as to make allowance for the gold cap which is to be united with the ferrule to complete the crown. I obtain suitable caps by swaging thirty-two gauge pure gold in a crown die made for the purpose, then flow twenty-karat gold solder into this cup until it is level full. Now place this cap, which represents very nicely the cusps of a natural tooth, on the ferrule, and hold in place with the pliers, while the patient is instructed to close the teeth together. It is then easy to see what alterations are necessary, and they can be made in a few moments, so that the occlusion may be made perfect. The crown may be completed the next moment after removal from the mouth, by holding the cap and ferrule together while the heat is applied to a sufficient degree to sweat them together without the addition of any more solder, and when this is done you know you have a crown that will perfectly articulate with its antagonists.

This method does away with taking impressions and articulations, and for that reason it simplifies the operation.—A. W. McCandless, *Items.*

TEMPORARY PARTIALS.

We often have patients who want partials of several front teeth, and do not wish to go without. A nice way to do this work is to select the substitutes, get everthing ready for the impression, extract the old teeth and roots, being very careful not to fracture the process. Now take the impression as soon as possible after stopping the bleeding; pour the plaster cast, when hard enough, separate from the impression, and cut away from the cast the sockets of the teeth as far toward the palatine surface as indicated, and from one-fourth to three-eighths inches deep.

For the teeth select those with roots, such as are used for continuous-gum work, break off the roots, leaving from one-fourth to three-eighths inch above the enamel line; round off all sharp edges, grind and fit the roots until each one will fit up into its natural socket easily. Now set them in their places on the trial plate, and try them in the mouth; when in position, if each tooth fits up into its socket just far enough so that the natural gum overlaps and hides the enamel line, they are all right and will make a natural looking substitute. This kind of work should be inserted as quickly as possible after extraction.—Dr. Steele, *Items.*

J. A. H., in the February *Archives*, asks for suggestions in regard to a case with a "very hard lump in the palate."

If making a metal plate would place on the model, over the hard lump, one or two thickness of tin foil, before molding, so plate would not touch at first; should be guided somewhat as to the thickness by the surrounding tissue; if soft, greater thickness, if hard, not so much. If a rubber plate should cover the hard portion with a piece of velum rubber, and proceed to vulcanize as usual. This would insure a soft cushion for hard part. I dissolve a piece of the velum rubber in chloroform, enough to form a thick paste. This I use as a cement to fasten the piece of the velum rubber in place, cutting it the right shape, etc., proceed to pack and vulcanize as usual. The plate must be made a little thicker to insure strength. When you have a lower plate to make for an elderly person, or one that has a tender mouth, do this same thing; line the whole surface, and the comfort that the patient will experience will make you both happy.—J. ALLEN OSMUN in *Archives.*

IN COPYING A MODEL in sand or marble dust, when it is difficult to remove it, and leave a perfect impression on account of under-cuts or any other reason, Dr. A. W. Freeman recommends covering the model with heavy tin foil, the model will be readily withdrawn, leaving the foil in the sand or marble dust, thus enabling one to secure a good copy.—*Review.*

Correspondence.

"I charge you that this epistle be read."

OBITUARY.

W. H. ATKINSON, M. D., D. D. S.,

BORN January 23, 1815, at Newtown, Bucks Co., Pa. His father was a Methodist minister and his mother was doctress to the neighborhood of Mercer Co., Pa., into which they moved, then sparcely settled. This gave him a bent towards medicine, although he was apprenticed to a tailor as well as working on the farm; but during this time he was perfecting his knowledge of nature and greedily sought recorded information. He early showed unusual traits for investigation into basal principles. Later he went to Meadville, Crawford Co., Pa., to study medicine with Dr. William Woodruff, whose daughter, Martha C., became his wife May 17, 1840. He was graduated an M. D. at Willoughby University, Willoughby, Ohio, in 1847. His thesis being upon Sleep. The college was burned with its records so that we are unable to compare this early literary effort with his later work. He began the practice of medicine, and especially surgery, at Meadville, in parnership with his preceptor (his father-in-law). From there he moved to Norwalk, Huron Co., Ohio, when, although successful as a surgeon and physician, he saw the wider field in dentistry (then in its infancy), and moving to Cleveland, Ohio, he formed a partnership with Dr. Slawson, and subsequently taking Dr. Chas. R. Butler as a student he later formed a partnership with him. He received his dental degree at the Ohio College of Dental Surgery at Cincinnati, 1859, and came to New York in 1861, where for a year he managed S. S. White's dental depot, after which he opened an office in the house of Dr. Wm. H. Allen, 18 West 11th street, the following year, moving to his house at 41 East 9th street, where he remained. He founded the First District Dental Society of New York, and devoted his entire time in efforts to advance the status of dentistry. His work in this connection is public property. He was the first president of the American Dental Convention at Washington, D. C., which preceded the American Dental Association. He was instrumental in organizing the New York College of Dentistry. Everything about him was made subservient to his ambition for the advancement of dentistry. The profession well knows how cheerfully Mrs. Atkinson welcomed her husband's friends to the household and the pleasure it gave her to attend the larger meeting in his company. They were hand in hand in seeking the highest and best. The one lived and worked for dentistry, the other lived and worked quietly but effectively for her husband and family.

He was a member of many societies, among them, honorary of the Odontological of New York, Central of Northern New Jersey, California State Dental Association, Vermont State Society, Northern Ohio Dental Society. Active or corresponding member, First District Dental Society of Southern New York, having been its president, American Microscopical Society, Odontographic of Pennsylvania, Northwestern Dental Association, Brooklyn Dental Society, etc.

His family consisted of three sons and five daughters of whom are living one son, Charles B., who has been his partner in practice for several years past, and five daughters of whom three married dentists. Dr. Geo. Viall, Pasadena, Cal.; Dr. Thos. Rowe, Cobourg, Canada; Dr. John M. Crowell, deceased.

Compilations.

"Gather up the Fragments."

BROKEN INSTRUMENTS IN ROOT CANALS.

BY WM. CONRAD, D.D.S., ST. LOUIS.

How to remove them, is a question often asked at dental meetings, with never a satisfactory answer to the query. Judging from my own experience, there is no set rule by which we can act; circumstances must suggest the method we are to follow in these difficult cases. We are never certain as to the degree of success we will have, and for this reason it should be our endeavor to avoid everything that will leave the case in a worse condition than it was when we commenced to work.

The kind of broaches to use in order to get the best results, in an important consideration, and not as easily answered as might at first be imagined. The individual preferences of the different dentists must be the guide to a proper selection.

For general use, I prefer the Jeweller's Swiss broach, Nos. 6-8, temper drawn to a spring, at the time of using, dressing the surface with an emery disc and burnishing with pliers. This gives a smooth, flexible instrument now ready for use. Sometimes I have to sharpen the point for difficult work.

Never use a broach many times. If a new one was selected for each case it might save us hours of annoyance, and perhaps some professional credit. Of course we use a new one every time the case seems to demand it, but to our sorrow this is not enough. Give up the old one, no matter how well it may be adapted for the work on hand, before we are compelled to make a change from necessity. Care in this one particular will save us trouble.

Never twist a broach in a canal; although we may be sorely tempted so to do, we are likely to twist once too often. There are more barbed broaches left in the roots than all other instruments combined.

To remove them.—The action of chemicals upon metals seems to me to be the ideal plan for solving this difficulty.

Sulphuric acid I have tried with fairly good results. It certainly will do no harm, and is worth a trial in case of necessity, as it softens calcified pulp matter and gives you more room to better treat the roots.

Nitric acid is one of the most certain means we have to use, although the danger in its use makes care a great necessity. I believe I can remove any steel instrument from a root by its use. I use it diluted, and the gold broach wrapped with cotton as my means of applying it. In some desperate cases I have taken advantage of it, aud have not been sorry.

DISCUSSION.

Dr. J. H. Prothero: I now make my own broaches out of No. 13 piano wire, and these give me very little trouble breaking off; they are strong and flexible. You can make just the kind the case demands—hooked, barbed, or plain. The hooks made on this kind will hardly break, no matter how much pressure you place on it.

Dr. A. H. Fuller has left broaches in the canals, but not so many as formerly. Uses the Donaldson canal cleansers and finds them better tempered and less liable to break than any other broach. If broach does break in canal, tries to take it out by entangling it with cotton. If he does not succeed in this, he would not attempt to drill it out, but would fill other canals thoroughly and treat the one containing the broken instrument with essential oil until thoroughly saturated; then, after wiping out with chloride of zinc, fill with gutta-percha.

Dr. Morrison does not break an instrument in a tooth, but considers it good practice to fill over it when you cannot get it out. Be sure to use a broach small enough in the small anterior canals and there is little danger of breaking them, and if made with *very* short handle they can be turned and manipulated quite easily. Always use shreds of cotton on broach.

Dr. J. B. Newby said that he uses the larger Swiss broaches as reamers to enlare the canals, to smooth the entrance to the canal, and remove the inequalities which are often the cause of the breaking of broaches. For this purpose he cuts off the point of the broach and uses it as a reamer, following with fine broach with cotton.—*Archives.*

What We See and Hear.

[We are always pleased to receive short, practical articles for this department, and invite any to send brief descriptions of such appliances, devices, methods, remedies, etc., as will be of interest to the profession.]

Remedy for Perspiring Hands.—The *British Journal of Dermatology* gives the following formula for perspiring hands:

℞	Eau de Cologne	- -	120 parts.
	Tinct. Belladonna	- -	15 "

Obtunding Sensitive Dentine.—I first obtund the sensitiveness somewhat with a solution of cocaine, and then follow that with a mixture of carbolic acid and caustic potash to destroy the contents of the tubuli. This treatment is very effective.—Dr. Briggs, *Inter.*

Cold in the Head.—For cold in the head, while in the acute congestive stage, there is no better remedy than gelsemium. One good large dose, say 10 minims of the fluid extract, taken upon going to bed, will effectually dispose of this troublesome and uncomfortable affection. One dose is usually sufficient.—*Medical Compend.*

Alcohol Vapor Generator.—I have a jeweller's blow-pipe about eight inches long that acts on identically the same principle as the instrument of Dr. Niles, shown here this evening. There is a wick saturated with alcohol enclosed in the pipe. If you heat one end of the tube, the vapor comes forth in a jet. I see nothing new in principle, simply a new use of the principle. —Dr. Eames, *Inter.*

Myrtol in Dentistry.—The virtues of myrtol as a sterilizer, are not fully appreciated. A very foul root, when freshly opened may be packed with a pledget of cotton moistened in myrtol and if properly sealed in the cavity with gutta-percha, through which a small opening is made it may remain for a week, when the root may be cleansed of its contents, which will be found completely sterilized. Try it.—*Review.*

The Deposition of Aluminum.—Aluminum is one of the most difficult and uncertain of metals to deposit electrolytically. The following recipe is given by M. Herman Reinbold, who states that it furnishes excellent results: Fifty parts by weight of alum are dissolved in 300 of water, and to this is added 10 parts of aluminum chloride. The solution is heated by 200 degrees Fahrenheit, and when cold, 39 parts of cyanide of potassium are added. A feeble current should be used.—*Items.*

Too Fast.—I think the *dental profession* would have saved a great deal to itself and its patrons, by continuing the use of "*soft gold*" in all cavities of tooth decay with thin, frail walls. I think it would have escaped a great many mortifying failures had it not jumped so hastily into the operation of "*implantation*," of indiscriminate and *immediate* root filling, and the insertion of fixed and movable "bridges," anchored to diseased teeth, stumps, and roots of teeth.—Dr. Thackston, *So. Dent. Jour.*

Rubber Cement.—Good rubber cement for sheet rubber, or for attaching rubber material of any description or shape to metal, may be made by softening and dissolving shellac in ten times its weight of liquid ammonia. A transparent mass is thus obtained, which, after keeping three or four weeks, becomes liquid, and may be used without requiring heat. When applied it will be found to soften the rubber, but when the ammonia is evaporated it forms a kind of hard coat, and causes it to become both impervious to gases as well as liquids.—*Rub. World.*

Sensitive Dentine Obtunding.— I devised a system for obtunding sensitive dentine before ether was used. It was not a complicated or dangerous process. It consisted in allowing a simple solution of chloride of lime to remain a short time in the cavity. Then with a sharp instrument, and the sharpness of the instrument was an important factor, you could cut where you could not touch before. This method I have used to a considerable extent since. For the general obtunding of sensitive dentine I have found lime water effective. Bicarbonate of soda often does the same thing, though more disagreeable to the taste. If patients will simply rinse the mouth with dilute lime water, not strong enough to be caustic, it is a good application to sensitive dentine.—Dr. Williams, *Inter.*

To Save the Edge of Sterilized Instruments.—Dr. John S. Miller says: While attending Prof. von Bergmann's surgical clinic at Berlin, recently, the following demonstration was made, which will certainly interest your surgical readers:

To render instruments perfectly aseptic, and to preserve the cutting edges from oxidation, they are boiled for five minutes in a one per cent. solution of carbonate of soda. They can remain in this solution indefinitely without rusting or dulling the cutting edge. When required for operation they are taken out, dried with a sterilized piece of gauze and handed to the operator. Whenever, in course of the operation, they come in contact with anything not aseptic, all that is required to re-sterilize them is to dip them for a few seconds into the boiling solution of sodium bicarbinate.

How to Use Gutta-Percha.—The only safe way to use gutta-percha is to heat it over water. Before placing it in the tooth cavity, it is well to smear the walls with a little chloro-percha—that is, gutta-percha dissolved in chloroform. Then the stopping will adhere to the walls, and make a more perfect and water-tight filling. See that is really soft before carrying it to the tooth; then, with a warm instrument, press it thoroughly to place, and polish quickly. Heating the tooth by a hot blast drawn into your bulb-blower from your lamp helps to manipulate it, and to make the filling stick to the walls of the cavity. If it is a soft variety, it is sometimes well to rub a very little oil or glycerine on your instrument. The red gutta-percha, used sometimes for trial plates, is good for temporary fillings, but the harder varieties, if good and properly used, will last a long time. —*Items.*

Device for retaining the rubber-dam in place when the use of the clamp is inexpedient. The device consists of a small tube with a bead head and a pin also with a bead head. The tube is passed between the necks of two teeth from the buccal side—after the rubber has been adjusted—and the pin is then slid into the tube from the lingual side. This keeps the rubber securely in place and leaves the four walls and crown of the tooth to be operated upon entirely free from obstruction. It is more easily applied in some situations than the clamp, or silk twist, and allows the patient more freedom in resting the jaw during a long operation. The pins are made in different lengths of about ½ to ¾ of an inch, to suit the varying requirements of cases, and of about the same diameter as an ordinary small toilet pin. The tubing to match can be had in lengths from the jewellers' material shops, and cut to suit. The beads used for the head to the tube and the pin are the ordinary white embroidery beads, small size.—McLeod, *Dent. Record.*

A Local Anæsthetic that is Safe and Reliable.—Much is said about local anæsthetics. Patented nostrums and private formulæ are being hawked about the country, and sold for from five to twenty-five dollars to dentists. Permit me to suggest a preparation that I think will come as near "filling the bill" as any they have tried, both as to cost, safety and effectiveness. It is a five per cent. solution of carbolic acid in water. Four or five drops injected under the gum each side of the tooth to be extracted. In most cases, this is effective. Swelling and inflammation around the teeth causes its action to be the more noticeable and satisfactory. Its effect is almost instantaneous. As one has to use twenty drops of this solution to get one drop of carbolic acid, I need not caution intelligent dentists against constitutional symptoms arising from a too free use of this agent, as it will not be necessary to use enough to produce such results.—C. T. Meaker, Carbondale, Pa., *Items.*

Exostosis.—A young lady, with sound teeth, consulted me lately for toothache. I examined her mouth carefully, but failed to discover a carious tooth, the pain was continuous night and day (for nearly a fortnight), always the same, not affected by any reagents. From this history I thought that the patient could only be suffering from one of two different diseases of the teeth, viz., intrinsic calcification of the pulp, or else exostosis. The next question was, which tooth was the cause of all this trouble. The patient could not help me to localize. After considerable time I detected a small quantity of tartar of hardish character upon the first left upper premolar. I explained all points to the patient, and told her by having this apparently sound tooth removed it might or might not relieve her. She at once gave her consent, and after removal I was pleased to see that my diagnosis was correct. I should like to ask the gentlemen present if they, in their practice, have found any readier means of diagnosing cases of this sort. Of course, had I in this case been wrong in the diagnosis, I should have felt myself almost guilty of manslaughter. As to the cause, I am really in the dark; I could not even give a suggestion, for as a rule we know that any form of irritation gives rise to exostosis, but this lady had no inflammation visible, etc.—Dr. Rymer, *Jour. Brit. Asso.*

The Girdwood Method of Preparing Glass Inlays.—The cavity is prepared without undercuts and lined with a piece of No. 60 gold foil, which is pressed to place by means of small hard balls of cotton-wool; thus a sharp impression of the cavity is got, but if a sharper one be wished a burnisher may be employed, care be taken to anneal often. This is then carefully removed and the resulting matrix about half filled with the glass powder made into a paste with distilled water. The matrix is then held by one corner with a pair of foil-forceps and the glass carefully dried over an ordinary alcohol lamp and fused; more of the paste is added and the operation repeated till the cavity is full. After each firing cracks from shrinkage will be seen in the fused glass, but after the third addition of the paste these will have disappeared. After allowing it to cool, the gold is stripped off and the inlay is ready to set in the tooth. If too full, it can be ground down with fine corundum wheels, followed by Arkansas stones and moose-hide points, with pumice powder and water, which leave the inlay with a fine gloss. I sometimes mix the glass with alcohol instead of distilled water; by its use the powdered glass is less likely to spark when heated.

Those who have adopted the Herbst and Reichter methods will appreciate the saving in time and trouble of non-investment, as well as the further advantage of cutting and polishing the inlay after it is set in the tooth.—Dr. John Girdwood, *Inter.*

Concerning the Care of the Teeth.—Maxims which should be adhered to by all parents, and those who have the care of children:

1. No child should be vaccinated during the process of form-

ing and the eruption of the first teeth, except during the prevalence of a severe epidemic. In fact, all exanthematous diseases should be carefully avoided.

2. Parents should not fail to have the first set of teeth removed "*in pairs*," instead of the regular method usually adopted.

3. No child should be permitted to eat between meals after the change from liquid to solid diet.

4. Owing to the physiological peculiarities, from one to four examinations at least, should be made annually by a competent dentist of every child's mouth after the eruption of the first twenty teeth.

5. Absolute cleanliness after each meal should obtain throughout the individual's life. Nothing short of this insures the preservation of the teeth, even operated upon by the most skillful dentist.

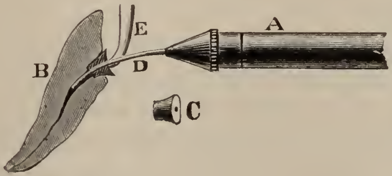
6. No dentist should treat any case without the complete removal of disease from the oral cavity.

7. As a rule, never extract one sixth year molar for a patient under sixteen years of age without extracting all four of them.—J. Y. CRAWFORD, M.D., D.D.S., *Headlight.*

COMBINATION OF TIN AND AMALGAM IN FILLING TEETH.—You wish to fill with tin and top off with amalgam, and you find that the mercury soaks into the tin, softening it. How can we avoid this? A hard nut, but I think I can crack it for you. Mix your amalgam, using enough mercury. Then express the mercury from the mass, using chamois, stout pliers and force. You produce a flat, hard, dirk of amalgam, containing a minimum of mercury, your "enemy." Lay the disk aside, and *let it set over night.*

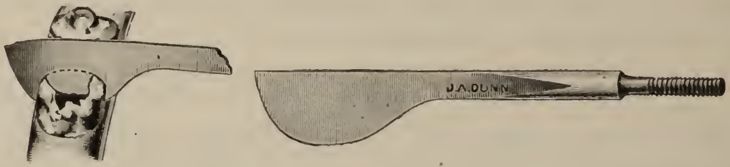
Now for your filling. Your cavity, you say, is approximal and in posterior teeth. Although my esteemed friend, that skillful operator, Dr. S. G. Perry, advises to the contrary, cut through to the crown surface and into all sulci. Apply your pet matrix. Put in your tin and condense it thoroughly. Then burnish with engine as per Herbst. Take your dirk of amalgam and break it into pieces, whice will enter the orifice below cavity walls and matrix. Have a suitable, *smooth* ball burnisher at hand and your little bunsen burner lighted. With tweezers hold a piece of the amalgam in the flame till it softens. Carry it rapidly into the cavity. This will be difficult, but it is possible. Heat the burnishers and rub the amalgam into position. It will set almost immediately. Complete the operation in this way, and in consequence of the rapid setting, I doubt if the mercury will have a chance to enter the tin. I top off all large amalgam fillings in this way, so that the trick has past the experimental period. Dr. B. C. Nash imparted it to me. The amalgam having originally set *out of the mouth* does not shrink any more in the tooth. —Dr. R. Ottolengui, *So. Dent. Jour.*

A Perfect Dental Syringe.—At the Mississippi Valley meeting Dr. J. Austin Dunn exhibited his improved dental syringe and demonstrated its use. The syringe may be used as a carrier and drop tube for peroxide of hydrogen in the treatment of root canals and abscessed teeth, for cleansing and treating inflammation of the soft tissues and caused by the third molar, injecting remedies into and cleansing pus pockets of pyorrhœa alveolaris, etc. An important use of this instrument, however, is the practical treatment of fistulous abscess by means of the syringe and the rubber cone point.



The syringe is charged with the medicament to be used, (A) the point (D) passed through the rubber cone, (C) and the cone then wedged into the tooth canal and held firmly by means of a suitable instrument. (E) The pressure on the cone, if well directed, will fill quite an irregular opening, hermetically sealing it, and at the same time will hold the syringe suspended so as to free the right hand if necessary. The pressure on the syringe bulb is applied at first light, then gradually stronger, and held firmly until the peroxide or other medicament used appears at the fistulous opening. If the opening in the tooth be too large or irregular, fill up and shape properly by use of Fowler's or Hill's stopping. An abscess cavity may be nicely drained by compression of the bulb, thrusting the needle into the pus cavity and then removing the pressure from the bulb allowing it to regain its original form.

The Dunn Hand Matrix.—The following illustration gives a fair representation of a new device shown by Dr. J. A. Dunn at the Mississippi Valley meeting. It is a hand matrix of convenient shape to pass between the teeth and be held in the position required, against the cavity borders.



The inventor makes the following claims for the new device:

Saves hours of time besides much worry and annoyance.

No danger of displacing any part of an amalgam filling when removing matrix.

The filling of approximal cavities when decayed below the gum margin made easy; and the covering of the cervical border absolutely certain; at same time insuring a full and well rounded filling and contour.

In this class of cavities we experience no end of worry and waste of time trying to overcome leakage, caused by the persistence of the gum and rubber-dam pushing up into the cavity. With the hand matrix it is surprising how easily and quickly this difficulty can be overcome, giving a free and unobstructed view of the cavity and cervical border.

In such cavities the hand matrix will help to make a foundation for a gold filling in a very few minutes, by placing a large roll of gold, or tin and gold, so as to lap well over the cervical border, holding the matrix firmly against it while packing the cavity, say one-third full, when the matrix can be removed and hand released, and the filling finished in the ordinary way with or without a fixed matrix.

The matrix is made of soft annealed steel and can be bent to any contour between the thumb and finger.

Viz:—Slide the thumb and finger rapidly towards the point of the blade bending slightly each time, this will avoid making a sharp angle destroying the smoothness of the matrix.

Treatment of Maxillary Necrosis.—By opening up the soft parts so that perfect access may be had to the dead tissue and by first washing out the pus pockets with peroxide of hydrogen, and then with an aqueous solution of the permanganate of potash, the odor may be abated; and if the potash solution be frequently used as a wash, the mouth may be kept free from offensive odors and in a generally wholesome condition. The potash solution may be used in strength of from two to four grains to the ounce of water. Peroxide of hydrogen is the best of all cleansers where there is pus, and in necrosis, pus is always present. Before the application of antiseptics, in order that the medicaments may be certainly brought in direct contact with the diseased tissue, peroxide should be employed to remove the pus, blood or dead tissue which might otherwise intervene. As soon as there is a separation of the dead from the living bone the sequestrum should be removed, as its presence is a source of irritation and liable to cause an extension of the trouble. All teeth which may be a source of irritation should be extracted. The pus pockets after thorough washing with peroxide of hydrogen, unless the parts need stimulating, may be packed with cotton dipped in campho-phenique, or water saturated with oil of cassia, and the opening closed with cotton dipped in chloro-percha. If, after the application of the medicament, the openings have been thoroughly closed the campho-phenique or cassia odor will be very perceptible on the cotton dressing the following day, when the treatment should be repeated, and the dressing renewed in order that the parts may at all times be under the most perfect aseptic conditions. If there is an inactivity of the parts, the application of aromatic sulphuric acid will prove beneficial. It may be conveniently applied on cotton and used in full strength or diluted one-half with water. Aromatic sulphuric acid is antiseptic and stimulant. It also has the reputation of dissolving dead bone, which is true to a limited degree, but I do not believe it possesses for this purpose sufficient power when applied in the mouth to make it valuable.

If the patient cannot be seen each day for a change of dressing, then perhaps a better plan of treatment than packing the pockets, is to supply him or his attendant with a syringe in order that the parts may be thoroughly cleansed each day, using as a wash either peroxide of hydrogen followed by carbolized water, or by a permanganate solution. But the progress of the disease should be close watched by the surgeon, the patient reporting at least once or more times a week. If the disease depends upon specific causes, such as syphilis, before a cure can be made, specific medication will be necessary, and with this treatment the same local application and other precautions are equally necessary as in those cases dependent upon other causes.—Dr. T. L. Gilmer, *Dent. Review.*

Societies.

"Wherewith one may edify another."

MINNESOTA STATE DENTAL ASSOCIATION.

The Minnesota State Dental Association will hold its regular annual meeting July 8th, 9th and 10th in St. Paul.

L. D. Leonard, *Sec'y*,
73 Syndicate Block, Minneapolis.

AMERICAN DENTAL ASSOCIATION.

The thirty-first annual session of the American Dental Association will be held at Saratoga Springs, N. Y., commencing Tuesday, Aug. 4, at 10 o'clock a. m.

Geo. H. Cushing, *Sec'y.*

NATIONAL ASSOCIATION OF BOARDS OF DENTAL EXAMINERS.

The National Association of Boards of Dental Examiners will hold its annual meeting at Saratoga Springs, N. Y., on Monday, August 3, 1891, at 10 a. m.

It is important that the Board of every State in the Union that has a law regulating the practice of Dentistry be as fully represented as possible. This Association has immense responsibility and it ought to have the benefit of the wisest and most discreet counsel possible. It is hoped that every Board having membership in this Body will be represented and that those that have not yet become members will certainly do so at this meeting.

Matters of great interest and importance will come before the meeting.

J. H. Martindale, *Sec'y.*

COM. ON "TIME AND PLACE OF MEETING."
J. Taft,
S. A. Garber,
F. A. Levy.

NATIONAL ASSOCIATION OF DENTAL FACULTIES.

The eighth annual meeting of the National Association of Dental Faculties will be held at Saratoga Springs, New York, on Saturday, Aug. 1, 1891, at 10 o'clock A. M.

Applications for membership must be in the hands of the Executive Committee, Dr. J. Taft, Chairman, sixty days prior to the meeting.

Each delegate must be a member of the teaching faculty in the college he represents, and bring a certificate signed by the President (or Dean) and Secretary of his college, stating that he is authorized to act for them.

Delegates must be in attendance promptly at 10 A. M. on the day of meeting, in order that all the business may be concluded before the meeting of the American Dental Association.

J. D. Patterson, *Sec'y,*
Keith and Perry Bldg., Kansas City, Mo.

INDIANA STATE DENTAL ASSOCIATION.

The thirty-third annual meeting of the Indiana State Dental Association will be held in Indianapolis on Tuesday, June 30, 1891. Members of the profession are cordially invited to attend. The State Board of Dental Examiners meet at the same time and place.

R. W. Van Valzah, *Sec'y,*
Terre Haute, Ind.

FLORIDA STATE DENTAL ASSOCIATION.

The eighth annual session of the Florida State Dental Association will convene in Jacksonville, Tuesday morning, June 2d, 1891, at 11 o'clock, and continue in session until final adjournment.

Officers, 1890-91: G. H. Perine, President, Ocala; F. E. Buck, 1st Vice-President, Jacksonville; W. H. Rosenburg, 2nd Vice-President, Palatka; Wm. Baylor, Corresponding Secretary, St. Augustine; B. B. Smith, Recording Secretary, Gainesville; C. P. Carver, Treasurer, St. Augustine. Executive Committee: James Chace, W. H. Rosenburg, L. M. Frink, C. G. Richardson, H. H. Newton. Essayests: W. H. Rosenburg, B. B. Smith, H. H. Newton, Wm. Baylor, F. E. Buck. Clinics: Dr. J. N. Jones, and others.

ALUMNI ASSOCIATION OF THE PHILADELPHIA DENTAL COLLEGE.

At a meeting held April 9th, 1891, all the graduates of the Philadelphia Dental College during the years '86, '87, '88, '89, '90 and '91, were elected members. Those desiring to accept such membership will please send to J. R. C. Ward, D.D.S., Treasurer, 1905 Fairmount Ave., Philadelphia, their name, address, and one dollar entrance fee.

Alonzo Boice, L. Ashley Faught,
President. *Secretary.*

ROYAL COLLEGE OF DENTAL SURGEONS OF ONTARIO.

The annual commencement exercises of the Royal College of Dental Surgeons of Ontario were held Tuesday, April 7, 1891.

The valedictory was delivered by W. Richardson, L. D. S., and the address to the graduates by J. Taft, M. D., Dean of the Dental Dep't of the University of Michigan.

The following graduates were admitted licentiates of dental surgery, the certificates being presented by H. T. Wood, M.D.S., president of the Board of Directors:

H. D. Boyes, T. Coleman, W. F. Corbett, O. W. Daly, S. W. Frith, C. D. Green, G. H. Henderson, J. E. Holmes, E. R. Howes, C. W. Lennox, D.D.S., C. H. Lount, O. Lillie, J. Letherdale, G. S.

Martin, A. H. Mabee, J. McBride, H. S. McLaughlin, F. R. Porter, W. Richardson, J. J. Sinon, M. J. Sisley, H. J. Stingle, H. R. Thornton, D.D.S., A. T. Watson, D.D.S., J. E. Wilkinson, W. R. Winters, G. F. Wright, all of the province of Ontario.

President Wood also conferred the degree of Master of Dental Surgery (M.D.S.) upon T. Henderson, L.D.S., D.D.S., Toronto; O. H. Zeigler, L.D.S., London; W. A. Leggo, L.D.S., D.D.S., Ottawa.

Total number of students in attendance during the session, 68.

Books and Pamphlets.

SEXUAL NEURASTHENIA. Its Hygiene, Causes, Symptoms and Treatment, with a chapter on Diet for the Nervous, by GEORGE M. BEARD, A.M., M.D. Edited by A. D. ROCKWELL, A.M., M.D.

The philosophy of this work is based on the theory that there is a special and very important and very frequent clinical variety of neurasthenia (nervous exhaustion) to which the term sexual neurasthenia (sexual exhaustion) may properly be applied.

While this variety may be and often is involved as cause or effect or coincident with other varieties—exhaustion of the brain, of the spine, of the stomach and digestive system—yet in its full development it can be and should be differentiated from hysteria, simple hypochondria, insanity, and various organic diseases of the nervous system, with all of which it had until lately been confounded.

The long familiar local conditions of genital debility in the male—impotence and spermatorrhœa, prostatorrhœa, irritable prostrate—which have hitherto been almost universally described as diseases by themselves, are philosophically and clinically analyzed. These symptoms, as such, do not usually exist alone, but are associated with other local or general symptoms of sexual neurasthenia herein described.

The causes of sexual neurasthenia are not single or simple, but complex; evil habits, excesses, tobacco, alcohol, worry and special excitements, even climate itself, are the great predisposing causes.

The subject is restricted mainly to sexual exhaustion as it exists in the male, for the reason that the symptoms of neurasthenia, as it exists in females, are, and for a long time have been, understood and recognized. Cases analogous to those in females are dismissed as hypochondriacs, just as females suffering from now clearly explained uterine and ovarian disorders were formerly dismissed as hysterics.

The causes and symptoms of forty-three cases are given, followed by a chapter on diet for the nervous, with treatment and formulas. Third edition enlarged. In one volume, 8vo., nearly 300 pages, $2.75. E. B. Treat, Publisher, 5 Cooper Union, N. Y.

Our Aftermath.

In China a hot gold needle is thrust into the gums to relieve toothache.

The snail has 110 rows of teeth, with 111 on each row, or 12,210 teeth in all.

The Chicago College of Dental Surgery begins "a three weeks' continuous practitioner's course" June 1, 1891.

Our Wheelmen.—Drs. W. D. and H. M. Kempton were recently elected President and Secretary, respectively, of the Porkopolis Club, Cincinnati.

M. H. Fletcher, M.D., D.D.S., Cincinnati, delivered a lecture on "The skin and its appendages, with special reference to the teeth," before the Cincinnati Y. M. C. A., April 14, 1891.

A New Hampshire dentist has put up a sign, "Teeth pulled while you wait," and draws much extra patronage from people who do not stop to think that teeth cannot be pulled in any other way.

J. E. Cravens, D.D.S., Propylæum Building, Indianapolis, Ind. (late of 11 Boulevard des Capucines, Paris, France). We are glad our friend Cravens is again a Hoosier dentist, and he is too, probably.

Died.—Sarah Elizabeth, wife of Dr. A. S. Condit, Findlay, Ohio, February 13, 1891.

Dr. Condit has our sincere sympathy in his sudden bereavement.

The London Dental Hospital having undertaken to supply artificial dentures, at a cost of about $10 to $20, is meeting with protests from those members of the profession whose "bread and butter" is thus being taken from them.

Dr. George A. Mills, New York City, who was intimately associated with the late Dr. W. H. Atkinson twenty-nine years, and the late Dr. Riggs eleven years, announces that he will devote himself to the practice and teaching of their surgical theories.

A Peculiar Case.—The death of Jeddiah Conklin, Sag Harbor's oldest resident, in April, was attended by a curious circumstance. He was stricken with paralysis and in falling broke his hip, remaining unconscious from the time of the accident. His artificial teeth were missing and it was found that the plate had lodged in the windpipe distending it sufficiently to allow of his breathing, but he suffocated immediately when the plate was withdrawn. The accident had prolonged his life.

Dr. B. R. Taber Laid to Rest with Scottish Rite Ceremonies.—Bowling Green, O., April 29. The funeral services of Dr. B. R. Taber, who died Monday afternoon, April 27, 1891, took place at M. E. Church this afternoon, conducted by the Masonic fraternity. The funeral sermon was preached by Rev. Scoles and burial was at Oak Grove. The deceased was one of the most prominent masons in Ohio. A large delegation of the Scottish Rite fraternity of Maumee valley came down from Toledo on the 10:30 train, and their ritual work as gone through with was deeply impressive. Dr. Taber was a prominent dentist in Northwestern Ohio and a 32° mason.—*Toledo Blade.*

English as it is Printed.—The following circular is worthy of preservation as a specimen of "United States" English:

GREATEST AND MOST POWERFUL ANESTHETIC YET DISCOVERED.

APPLIED HYPODERMICALLY.

This Anesthetic is not known as yet to the Dental Profession. The proof is conclusive however now, that after a long and persistent effort to discover a painless remedy for extracting teeth, is really gratifying to us, and you, to have nine out of every ten to assure you, with a smile, that there was none, if anything, very little pain, which sometimes is the case experienced with the extraction of their teeth. One trial will convince the most skeptic. The beneficial result derived therefrom will be pleasing, both to the patient and Operator. Having had 13 successful years at the operating chair, and trying every local anestic I heard or read of with the hope the pain might be lessened in the extraction of teeth, led me to experimenting, at last I have discovered the most successful yet ever offered to the Dental profession. You read in books published monthly from some brother D. D. S., of Local and Hypodermic remedies. Ask yourself this question. Are they worth anything? I would say no most emphatically. That which does with it claims to do demands a price. In order to introduce and induce you to give the medicine a trial, we will on receipt of $1.00 send you an ounce vial, and in connection with this will give you our method of Flasking, so that it will only require you from 5 to 10 minutes to finish a partial Rubber Plate, and only 15 or 20 minutes for a full plate. This method alone is worth ten times the amount we ask you for the medicine.

Hoping you will honor us with a trial order,

We remain yours truly.

Address The ——— Medical Co.,
———, ——— Co., Ohio.

Meanwhile He Learned Something.—Prof. James T. Whittaker, M.D., in a commencement address said:—

"It is just twenty-five years ago this very night since I sat in the row of medical students, and when my name was called in the list, walked with faltering steps to the platform, faced the audience with great timidity, received my diploma with trembling hands, and with difficulty found my way back to my seat.

"A quarter of a century has gone since then. Meanwhile I have learned something—I could not help learning something, and it occurs to me that I might tell you some of the things I have learned that may profit you while you are waiting for practice, or when, weary in it, you are wending your way home alone at night under the silent stars

"Well, the first thing I learned was to correct a very erroneous view which cost me much suffering on that memorable commencement night. I very soon learned that the whole world was not constantly engaged in looking at me; that each man had affairs of his own which were infinitely more important to him, and that I could hope to engage his attention only by doing him some real service. Then I was forgotten as soon as the service was done. Sometimes indeed he forgot to reward the service.

"The next thing I learned was that all the places I wanted to fill were already full, and nobody volunteered to vacate in my behalf. Nobody seemed to know that I could fill them better. Thus I was very quicky reduced to two alternatives, to join the great army of the unappreciated and fill my part of the earth with lamentation or go to work. I chose the latter without subsequent regret, and now recommend it to you. You may be born to greatness in the social scale; you may have it thrust upon you in politics, but you will have to achieve success in medicine, and there is no other way to reach it.

"Work with a purpose. Desultory work amounts to nothing. It may make an amateur, but never a professional. A few friends may applaud, but the public never turns out en masse to an amateur performance. Work with patience. Paroxysmal work amounts to nothing. It, too, makes the dabbler and dilletante. Purpose, persistence, patience furnish finally the power of concentration, and the fruit of concentration is what the world calls the work of genius.

"In no pursuit of life is the power of concentration so necessary as in medicine. It makes the cool observer, the ready diagnostician, the sound therapist. It gives prompt response with fertile resource in sudden emergency, and above all things economizes time.

"Days of dullness and depression come to us all. On these days you may do the drudgery that belongs to every toil. Thoughts and principles conceived in moments of inspiration may be executed in hours of dullness.

"You are fortunate in beginning your studies in the dawn of a new day. It is impossible not to recognize the fact that the practice of medicine is soon to be conducted on entirely new principles. The recent discoveries with which the world yet rings disclose principles which are more directly to address the cause of disease.

"All the more will it be necessary now to be able to make the diagnosis. Given the name of the disease, and the treatment will suggest itself. What is the name of the disease? How many cases of consumption lurk under dyspepsia, of Bright's disease under headache, of vertebral caries under rheumatism. Inspire your patients with hope. In the most hopeless case,

'Strike him not dead with a denial,
But leave some glimmering of a doubtful hope.'

"You may be deceived in your diagnosis. Voltaire said: 'Only the charlatan is always certain.' still oftener in the prognosis."

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Contributions.

"A word fitly spoken is like apples of gold."—Solomon.

THE HISTORY OF DENTISTRY AS A CO-ORDINATE BRANCH OF THE HEALING ART.*

BY F. S. WHITSLAR, D.D.S., YOUNGSTOWN, O.

Every thought, every impulse, every principle or rule of action, as well as every living thing, has originated in a germ of its type. The being who rules in the heavens and among the inhabitants of this lower sphere, has in but few instances brought anything at once into mature existence. To be born, to grow, to arrive at maturity, to die, and to decay is but the history of every living thing as well as every work of creation. Institutions of learning, the sciences and arts, have been progressive in their character. It is not my purpose to trespass upon your time by giving you an elaborate history of dental science, but will concisely sketch the history of the dental art with a view of placing before you our position as a co-ordinate branch of the healing art. To do this it will not be necessary to determine the exact date at which the practice of medicine was first known.

Like many arts, its origin is involved in considerable obscurity; but this we know, that at a very early age the power to heal the sick, mitigate the pangs of suffering humanity, and stand between disease and death, was esteemed to be a God-given attribute. Much has been said and written respecting the antiquity of medicine. Now I claim the same antiquity for the dental art. The Ancients, who inclined to mythological rather than to natural causes, affirmed the science of medicine to be a divine emanation and impersonated it, first in Apollo and next in Esculapius. Thus its early history is mixed up with mythology and poetry.

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* Read before the Northern Ohio Dental Association, held at Oberlin, May, 1891.

Now while it is almost impossible to imagine a state of primitive society so happy as to be free from pain and disease, yet we find in proportion as people advanced towards civilization, and abandoned their more simple habits of living for idleness and luxury, so did disease in its various forms call into requisition the skill of the physician. Those same habits of refinement and luxury, and consequent attention to personal appearance must have rendered the practice of the dental art one of considerable importance even at a very early period of the world's history.

According to Heroditus there was a subdivision of medical science, and no practitioner was allowed to practice any but his own peculiar branch. Hence some were oculists, others attended solely to diseases of the head, others again to those of the teeth. It is not, however, till the time of Hippocrates, that we meet with any distinct notices of the diseases of the teeth. This appears the more extraordinary, as the significance of these organs, to say nothing of their useful or ornamental functions, was regarded by the ancient Egyptians in a very remarkable manner.

One of their most severe and degrading punishments consisted in the abstraction of a front tooth.

There can therefore be, I think, but little doubt that the manufacture of artificial teeth and other branches of the dental art were practiced at a much earlier date than that of which we have the first mention in history. The loss of the front tooth, whether by disease or otherwise, would, during the existence of that Egyptian punishment, give rise to unpleasant suspicions; and it may be presumed that every exertion would have been made to supply the deficiency. Belzoni and others discovered rudely manufactured teeth in the sarcophagæ of the Egyptians.

Again, as regards the use of gold leaf, Sir Gardiner Wilkinson states as a singular fact, that the Egyptians stopped teeth with gold. Proof of this was obtained by the examination of some mummies from Thebes. Bridge-work was not unknown to the ancients. Dr. George Evans gives some illustrations of their primitive character and antique methods. We also have historical evidence that the general appearance of the teeth and their diseases, attracted considerable attention among the Greeks and Romans. The wearing of artificial teeth formed the subject of satire of some of their poets. Hippocrates and Galen mention sundry electuaries for beautifying the teeth.

The subdivision of medical practice to which I referred before, justifies us in concluding that dentistry engaged as large a share of the attention of the ancients as did any other branch of the healing art. Albucases, an Arabian physician, who lived in the early part of the eleventh century, wrote on diseases of the teeth and gave drawings of instruments then in use for extracting, scraping and other dental operations. He directs that if hollow, they should be stopped with cotton, refers to filing teeth and fastening loose ones with gold thread.

However, giving the ancients the credit to which they are entitled, it is not at all extraordinary that some of their opinions and methods should be useless for our purposes. They did not have the aid of that mighty power, the microscope; at least no mention is made of microscopic investigations in those times to which I have been alluding.

It is somewhat difficult to appreciate the observations of Hippocrates, who describes the teeth as glutinous extracts, from which the fatty matter has been burnt out by heat, and who affirms that they are harder than the other bones because they have no heat in them.

Aristotle, who has some observations respecting the teeth of man and animals, declares them to be the only bones which grow through the whole life, saying that if they did not they would soon be worn away by attrition. He adds that the growth is manifested in those teeth which have lost their corresponding opposite in the other jaw, referring of course to the elongation of teeth arising from the want of opposing force.

Now, by these observations from ancient authorities, I think I have shown the antiquity of our calling, and the attention bestowed upon the teeth at the earliest period of medical history. I shall, however, proceed to bring my observations somewhat nearer to our own time. About three hundred years ago, the dental art began to receive that peculiar attention to which, from its importance and general usefulness, it was entitled.

About that time there were a number of treatises published on the subject, and while their usefulness has been greatly diminished by discoveries since made, still they are interesting as evidence that dental surgery was in the sixteenth century considered of very great importance, and that time and experience only were required to raise it to its proper station in medical art. Fouchard, of the eighteenth century, was the first to classify the diseases of the teeth. Previous to his time the practitioners appear to have merely considered the teeth in their mechanical arrangement taking little or no account of them as complex organic structures, entering by their own vitality into the formation of the living body.

Fouchard not only directed attention to the construction and separate treatment of the teeth, but he also pointed out the indications which, in common with the adjacent parts, they furnish of the general state of the health. It was without question the most important advancement in dental science to demonstrate that the teeth afford an indication, not mearly of the apparent, but also of the innate and fundamental constitution of individuals.

It was, however, in 1747 that Haller, after thirty-six years of close study, published his remarkable work on physiological and pathological science, the results of actual observation of the laws that govern the growth and decay of living bodies. The first work that appeared in English in a popular form was by Berdmore, and was published in 1770. In 1772 the celebrated work on the "Natural History of the Teeth," by the great John Hunter was published. This was followed by a dissertation on the "Structure of the Teeth of Man and Animals," by Robert Blake. So much had the subject grown in consideration that by the end of the eighteenth century more than one hundred works had been published on the subject, including those of Malphigi, Purkinge, Retzius, Muller, etc.

Time will not permit me on this occasion to enumerate the various valuable contributions to dental science that have since been published; but I may, without a desire to lessen the merits of others, mention the names of Fox, Bell, Goodsir, Nasmyth, Tomes, Owen, Magitot, Wedl, Harris, Salter, Kingsley, Garretson, Richardson, Taft, Black, Miller and a host of others. Men identified with our profession and who stand pre-eminent as representatives of dental science and art.

In conclusion permit me to say that while the present is an age compulsive of deep thought and earnest reflections—an age that lays manly hold on things now that were once only dreamed of and hoped for; par excellence, an age of progress and scientific discoveries.

I would not be acting in accordance with my own impulse if I failed to congratulate the members of the Northern Ohio Dental Association for what they have done by associated effort in elevating the standard of dental science and art. I said by associated effort. That is in harmony with a law of the universe: "It is not good for man to be alone," means something. True, some of the pioneer members, men of broad minds and warm hearts, have passed out through the silence into the beyond, yet their influence still lives, and of them we say, All hail! Well done!

Congratulate you because to-day your chosen profession stands the peer of any of the learned professions.

Thanking you one and all for the uniform courtesy shown me while acting as your presiding officer and soliciting a like indulgence for my worthy successor my task is ended.

DEVELOPMENT OF TEETH.*

BY W. H. WHITSLAR, M.D., D.D.S., YOUNGSTOWN, O.

The first general conception with which we should begin the study of vital phenomena is the mutual dependence of all things, which in their groupings together, compose the system of nature. This dependence requires for each being the simultaneous existence of all the others. Physiology is an independent science resting upon truths of its own, which it draws from the observation of those actions, which in their aggregate connections constitute life, but it is enriched by facts furnished to it by collateral sciences. Of all collateral studies anatomy is that which will enable us to obtain the best appreciation of the beauties of living phenomena. Anatomy is, indeed, a part and parcel of physiology, bearing the same relation to it as geography does to history. Now, the phenomena of development, growth, sensation, decay and death, and many others, belong to life, but life occurring only in material structures which subsist in obedience to the laws of physics and chemistry, is truly a super-structure on these laws, and cannot be studied independently of them. Indeed, the greater part of the phenomena of organic beings are chemical and physical phenomena, modified only by an additional principle—*life*. When asked what is life, all we can do is to tell some characteristics of the principle of life. One says it is the union of soul and body; another that it is the inherent principle of action, but I think it may be tersely summed up in this: "Life is the visible expression of that arrangement in nature by which elementary substances are in such wise combined as to form organic bodies."

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* Read before the Northern Ohio Dental Association, held at Oberlin, O., May, 1891.

The beginning of all things is small, and the neglect of small things is the grand error in studying life as well as in starting life, and I might add this aphorism: "The nearer to the beginning that the deviation from the right course is, the greater the wrong in the end."

To begin aright, then, we must recognize a fact that was unknown for many centuries to anatomists and physiologists, and that is this: *All animals arise from eggs.*

The human body, like every other animal organism, is com posed of a vast number of units called cells, all of which originate from a single form called the parent cell: to give its scientific name it is termed *cytula*. I do not mean that all cells are originally from a single form in outline, but in substance we reproduce only our kind; there is no evolution from one organized being to that of another different in form and duty. Some authorities say that it is more proper to call a cell a corpuscle or plastid.

The parent cell, or cytula, is the result of the union of the spermule, or paternal cell, with the ovule, or maternal cell. The union of these two elements is commonly spoken of as the impregnation or fecundation of the ovum.

Following impregnation the process of segmentation takes place by which the egg divides and sub-divides by a series of successive segmentations into a number of cells of which all the cells of the future animal are the direct descendents. We must, however, keep in mind that whilst the whole body of matter is called an egg, yet only a part is the true egg, and the remaining part forms, or is used, as food by the growing germ. It is only the *germ spot* that divides, and this spot is generally known in scientific parlance as the *germinal disc.* In birds the egg is large, and the larger part is used for food on account of its being unable to segment. In mammals the ovum is small and contains a small amount of food yolk and in consequence the whole ovum segments. Partial segmentation is known as *meroblastic,* and when the whole egg segments it is known as the *holoblastic type.*

Now, it would be impossible for me to give in one dissertation on development of the teeth even a synopsis of segmatation and its sequelæ resulting in the perfected animal, so let it suffice to say, that consequent upon segmentation there are formed three layers of cells known as the hypoblast, epiblast and mesoblast. From these layers of cells, intricate and mysterious but yet beautiful, developments occur giving rise to parts whose aggregate co-ordinations reveal the living man. We now learn that the enamel of a tooth is a derivative of the epiblastic layer, whilst all the remaining parts are of mesoblastic origin. The enamel then comes from that layer which forms the epidermis, retina of the eye, labyrinth of the ear, taste buds, crystalline lens and the lining membrane of the mouth. The dentine, cementum and pulp of the tooth takes origin from the same layer that composes the bones, muscles, arteries, veins, lymphatics, generative and urinary organs, connective tissue, etc.

It would be proper to describe the process of the development of the jaws and buccal cavity, and it would conduce to our understanding of the development of teeth, as well as how enamel and dentine are deposited, but time and space forbid. It involves a minute study of histology as well as of crystallography.

Now, dental histologists tell us that at about the forty-fifth day of embryonic life, in the epiblastic layer which covers the gums, is seen the first indication of cellular activity which will result in the evolution of the teeth. The thickening of the epithelium is at first general, but after a short time it becomes thicker at the crest of the gums and in a line of the future arch of the teeth.

As the outer cells are an elaboration, or a kind of casting off from the younger cells which have performed their active work of life, we find that, as a result of the activity of the younger cells, or infant layer of the rete malpigii, the older cells proliferate so as to form a ridge. At the same time these cells are heaped up, the infant layer is pushed down, pushing the subepithelial layer beneath.

This gives rise to the opinion of Goodsir that there was first formed a grove, called primitive groove. Naturally this would seem so if the older cells were taken away leaving a groove, as it were, in which they rested. All these cells together as they repose in the so-called groove have been given several names, as *bourrelet*, which means pad or cushion, or *cartilago dentalis*, because of it having been supposed to be cartilage. This is now called the *epithelial band*, because it expresses the condition of affairs better.

This band assumes a direction with its axis toward the inner side of Meckel's cartilage, and the next thing to notice is the peculiar curve of the band whose convex side is always toward the outer side of the jaw. The whole band is, however, on the inner side. At the anterior part of the jaw it is deepest and narrower, and gradually grows shallower until it flattens out into the epithelial covering of the jaw.

In the deeper parts of the band cellular activity is greater, and here cells proliferate to form a process of the band, and spreading out into a sheet-like form, it is termed the *lamina*. As the lamina grows deeper the band becomes shallower, and sometimes disappears. From the lamina at regular periods corresponding with the position of the future tooth, small buds appear and extend into cords, each cord developing, in time, into the enamel organ of the temporary tooth. As said before, the cord is a process of the lamina and like it is composed of a solid ingrowth of cells which constitute the lamina. The infant layer constitutes the outer layer of the cord and is composed of oval and spheroidal cells. As the cord grows, cells inside of it proliferate to form a bulbous extremity. Then the part of the cord connecting the bulb with the lamina is known as the neck of cord. The length of the cord varies. In the human being it is short. For the permanent teeth the cords are longer than for the temporary teeth. It is well to keep in mind that the cord is derived from the lamina, and the lamina is from the band, and the band from the oral epithelium. Remember too that the *infant* layer of cells constitutes the outside layer of the cord.

Speaking of the cord it might be well to speak of the cord for the permanent teeth. The cord for the permanent tooth arises from the cord of the corresponding temporary tooth, that is, from the central and lateral incisors, bicuspids, and in some instances, from the first permanent molar. As a rule the cord for the permanent molars arises from the Malpighian layer of the mucous membrane and from the lingual aspect of the temporary teeth.

The time for the origin of the cord for the permanent teeth varies considerably. The length of the cord also varies, and has a spirility that marks it as a characteristic of the cords for the permanent teeth.

As the cord grows down the end becomes bulbous and it invaginates because of its contact with a papilla which is derived from the connective tissue which will be remembered as a derivative of the mesoblast.

The growth of the papilla is upward toward the gum, whereas the cord has been downward into the substance of the jaw. The bulb of the cord then becomes known as the *enamel organ.*

Now this enamel organ has been and still continues to be the source of much discussion. All agree that this bulbous part of the cord or enamel organ is the means by which enamel is deposited, but just how it is performed remains undecided by all authorities. At the Union Dental Meeting in Boston recently, Dr. R. R. Andrews, of Cambridge, Mass., who is now one of our best microscopists, in a paper on the Development of Enamel, states, "That the cells of the internal epithelium of the enamel organ, the ameloblasts, contain in the part nearest the calcifying tissue large numbers of minute glistening bodies, which have been misnamed granules, but which are really calcospherites." And he further states that these little globules are given out by the enamel-cell into protoplasmic substance and there a condition known as caloglobulin is formed, which in turn calcifies, forming rods, and the protoplasmic substance which surrounds them becomes known as the cement substance.

Prof. Sudduth, from whom I have largely drawn this description, regards the enamel organ as a store-house for the calcific material of which the enamel is composed, and that the stellate reticulum, or that part which is contained in the bulb of the cord, is the essential agent in the formation of enamel, and that the ameloblasts, or that layer of cells to be found on the part of the bulb which invaginates, are the agents which, like men laying brick, deposit the granules in many columns which form the enamel. In this enamel organ there seems to be about enough calcific matter to form the first layers of enamel. Afterwards the outer cells of the enamel organ disappear and capillaries are found nearer the ameloblasts, so that accordingly the lime salts may almost directly be deposited from the blood. Here is an important item to consider, for by this knowledge we can almost infer that infectious and zymotic diseases may arrest development resulting in those markings we so often perceive.

As ameloblasts are to enamel, so are the odontoblasts to dentine; for the papilla is surrounded by a layer of cells known as odontoblasts, and these cells operate in a similar manner as do ameloblasts in depositing the calcific material. As depositions of dentine take place, the papilla grows smaller and eventually becomes what is known as the dental pulp. It is worthy of note that there is no connection whatever between the enamel organ and the dentinal papilla by blood vessels or other tissues and consequently none between their products. At the same time that the dentinal papilla begins to grow there also begins to form around it and envelope of tissue, coming as a derivative also of the mesoblast, and the exact office of this envelope, so to speak, is not known, but is supposed to be instrumental in forming the cementum. This forms at the same time that the periosteum for the bones is in progress. As time progresses all these processes unite to make the formed tooth, and this illustrates our proposition in the beginning, of the mutual dependence of all things, and this substantiates the truth that no effect is the result of any one cause, except the first Great Cause.

In conclusion, allow me to say that it must be acknowledged that this subject has only been treated in a summary way in this paper. A paper complete in all details cannot now be written, since the cycle of our knowledge remains immature. This cycle began in the year 1574, when Eustach discovered the tooth germ and in 1815 when Delabarre gave the first details of the development of the teeth. Within this cycle of experimentation and discovery we have to notice the names of Legro and Magitot, Tomes, Huxley, Hunter, Desirabode, Sudduth, Beale, Andrews, Black, Graf, Spee, Tomes, Bödecker, Heitzmann, Abbot, and many other luminaries whose contributions have almost completed the cycle, but ere it is completed all must unite in definite conclusions.

VALEDICTORY ADDRESS AT THE FORTY-FIFTH COMMENCEMENT OF THE OHIO COLLEGE OF DENTAL SURGERY, MARCH 11, 1891.

BY J. S. CASSIDY, D.D.S., M.D., PROF. OF CHEMISTRY.

Gentlemen and Lady of the Graduating Class:

For a period of nearly twenty years it has been my privilege to attend the annual commencement exercises of this institution. By them I have mainly measured the rapid passage of time, and on each occasion have I thought with pleasure of the many who have here received their diplomas and gone forth to a successful life; and with sadness of those among them, as well as of those who sat in our midst on the stage, who have gone beyond to receive their reward in the "Land of the Leal."

Ever since the early days, when the world was young, it has been the high prerogative of man and woman to offer words of advice, on occasions seemingly appropriate, to their young and inexperienced friends. I shall not, however, impose on you in that direction, at a time, too, when you cannot possibly escape, inasmuch as I am well aware that the youthful individual is prone to consider himself fully matured, somewhat like to the fabled female Minerva, who is said to have been born full fledged from the brain of Jove, thus alway capable of managing her, or his, own affairs, even before the time when youth generally assumes the *toga virilus*, on to the assumption of the degree of D. D. S. and later on, until the time when man might wish to be a boy again.

I would much rather play the part of Calypso than of Mentor, and with all the confidence which our mutual relations have developed during the last few months, picture to you the probabilities of a golden future, the glowing nimbus of which, touches and illuminates your atmosphere to-night.

We are told that man is a free agent, a God given privilege, often confounded in our minds with the selfishness inherent in human nature; but man is also an interdependent being. We cannot live in comfort and contentedly independently of others. We must necessarily partake of our brother's destiny for either good or evil.

Happy is he, therefore, who judges correctly and knows men —himself included—intuitively, or from early training, whose feelings are balanced by his intellect and who is thoroughly in earnest in striving to do only that which is good. But he whose environment has not been, or is not so favorable, and still who chooses to do that only which is right, is the truest exponent of free agency, whose living has made the world better than he found it, and who impresses most deeply his identity on the brightest pages of the history of the country, or the community in which he lives.

Of these two classes of the good and useful citizen, there are doubtless not a few prototypes among you, and on each is imposed the responsible, though pleasant task of proving the truth of the assertion, that he who continues to do his duty, within his own sphere, cannot fail in reaching ultimate success.

The world may ask, "Of what does a successful life consist?" The correct answer will depend on a variety of circumstances. In the first place, the person must have more or less natural ability for the particular calling which he selects. He must *cultivate* a love for the duties which his sphere in life imposes. He must also remember that the mercenary interest should, at least, balance the congenial interest.

Oliver Goldsmith, than whom there is no sweeter spirit among the prose writers and poets of his own or any other time, spent the best portion of his life in striving to prepare himself for, and to succeed in the practice of medicine. But his loving, simple nature would not permit him to continue in daily contact with the afflictions, disease engenders. He was compelled to adopt literature as a profession, and although he has left a name second to no one in the purer walks of English literature, his inability to demand or secure a just monetary reward for the grand, exquisite productions of his brain, led him to exclaim, that life with him was a disappointment, the dragging of a lengthening chain, day by day.

No man can be fully satisfied with himself so long as he remains a mere hewer of wood and drawer of water. It is not possible that human nature should contentedly accept as permanent, such vocations, and as a consequence the thoughtful, poor man is always on the alert for opportunities to better his condition, to acquire a comfortable home, and means to educate his children. If he applies himself earnestly to such an object, his laudable ambition will be fulfilled, and *his* life will be successful in all that the term implies.

Then again there are those who are said to have greatness thrust upon them. Is it so? Is there a single instance of any one in the world's history, past or present, who labored not, and yet reached the goal of a worthy ambition? or even retained with honor the position, which, perhaps, royal birth may have given him? Was the great general who left us but a few days ago, a mere accident of an inevitable war? Not so. He took advantage of opportunities presented during that unhappy period, opportunities too, open to all others as well as to him, and *he* succeeded. And if an exalted position be really thrust upon a man, as in the case of kingly hereditary succession, the new encumbent, unless he labors incessantly and judiciously, will ere long become an insignificant factor in the affairs of his own country. As Addison puts it, "'Tis not in mortal to *command* success; but we'll do more, Sempronius, we'll deserve it."

Again you ask, of what does success in human life consist? I know full well that I am laying myself open to unkindly criticism by asserting that Fame alone, even when spelled with a capital F, is a delusion if it be not accompanied by sufficient of the world's goods to render the famous one, above and beyond "the slings and arrows of outrageous fortune." Take away the comforts that should surround this short life of ours, and fame, though it extends to the uttermost parts of this little earth, will not satisfy any of the units of equivalent value belonging to the human radical.

What say you of the business man, who hss builded carefully and well a permanent barricade against all possible commercial complications? And contrast with him the temporarily prosperous merchant, who after a time loses his grasp upon affairs and is compelled to become the hireling of the first? Which of these two men in the estimation of the world, as well as in their own opinion, all other things being equal, in point of health, family ties, and kindly nature, is a success? Do we not all say that the latter failed in a once prosperous business and is now working for a salary?

Does not the so-called professional man, whether he be a disciple of law, or medicine, or music, or one capable of depicting on canvas the heavenly beauties of another Angelus, measure his fame by the physical luxury, as well as by the mental pleasure it can bring?

Pasteur, and Koch, and Miller, are financially safe, and therefore above the accusation that the good they are doing to their time and generation is due to mercenary motives. But would even they, or could they labor as they do regardless of material recompense? If such a thing were possible, we should all have to look on them as impecunious cranks, a term which does not apply to either of them by any means.

If a person acquires financial comforts in reasonable amount by the orderly processes prescribed by recognized authority, such a person is to be emulated and respected. A sordid spirit is *not* necessarily concomitant with business ability, nor is professional excellence incompatible with common sense.

These simple statements lead me to remark that, judging by your quiet gentlemanly behavior, your determination to do the right thing at the right time during the late session, there can be no lingering doubt in the minds of those who know you, of your continued successful march in the direction your ambition leads. It is true your credit may have been enhanced by contrast with the occasional ebulition of an overplus of youthful vitality on the part of some of the members of the junior class. They were rather noisy at times, but they are young and innocent. Their time will come bye and bye.

Some of you have already been in the harness, practicing general medicine; many of you have been teachers in public and private schools; others have been engaged in writing for the newspapers, and in fine, nearly *all* the ordinary vocations of life have culminated in your, thus far, brief experience; and all of you, including those who were born dentists, have discovered the necessary qualifications in your own person, for the special profession you have adopted. I feel assured that you have acted wiseiy in your choice.

There is no one, perhaps, who can truthfully claim to possess the gift of prophecy, who can "see a hand we cannot see, and hear a voice we cannot hear," notwithstanding which, I venture to again remark, that a very large majority of this present graduated class, shall in due time be the benificiaries of that prosperity, which a properly regulated dental practice most certainly confers.

I see in the not distant future a pleasant, thoughtful man, after the daily routine of his labor is concluded, following the bent of his inclination in the way of recreation; perhaps it may be by holding in hand that most beautiful of all four footed animals, a Kentucky thoroughbred; and, by the way, would it not be in accordance with justice to all concerned, to have such a well disposed animal that other members of your family, as well as yourself, can manage with perfect safety? for there are some lords of creation not so considerate.

You meet or pass on the avenue the general practitioner on his toilsome round of duty, whose face is likely to be the index of the thought that there are those among his patients, both old and young, whos precious lives his medicines cannot save.

"And oh; the pity of it, Iago."

I would make no invidious comparisons between the life of the general physician and the dentist, except in so far as pertains to the difference in the amount of satisfaction, mental and monetary, in the practice of each. The physician's work is never done. Days and nights as well, and on the Lord's day too, in all sorts of weather, worn and weary though his body may be, he must be ready to answer all calls for his professional services. With you, however, as I see you later on, your office hours ended, you are absolutely free in all your senses, free to feel that you are indeed your own master for the time being, and thus be prepared for the morrow. And when morning comes, invigorated, fresh as the morning's dew, and strong as the young oaks of the forest, you are capable of meeting successfully the necessarily sometimes harassing, and always exacting duties of the day. And then you know that the hour of relief will soon come again, and peace with its snowy pinions follow you wherever you may go. Another evening comes; it may be then you have no desire or taste to drive a spanking team, nor for any other out-door exercise. For some reason your spirits may be depressed, your body possessed by *ennui*, a word, which Prof. Wright, who is something of a Frenchman, pronounces *ongway*. You realize that there is no better panacea for such feelings than a welcoming visit to the one above all others, with whom you think you are in love. The bachelor physician, if a good one, in such a trysting place, would be on the ragged edge lest Tom, Dick or Harry should call him forth, a catastrophe most likely to occur. But with you, your happiness is not interfered with on such pleasant occasions in that called for manner. There is no divided duty, then, between the public and you and those you love. I, therefore for these, and many other reasons, congratulate you, gentlemen, on your selection of a profession that enables you to have a large proportion of the time allotted to us in this short life, to do with as you please.

There is, in my opinion, no other occupation to the person properly, physically and mentally equipped, so free from serious trials and unsatisfied ambition, and yet equal to the best in its immediate returns, as the one you have chosen. Alas! however, "every rose has its thorn." There are many who are of us, but not with us, who seem incapable of any higher appreciation of this sweet truth, than is involved in the money getting part of the returns.

It may be the number of these shameless dental quacks is relatively small, but so loud is their braying, so conspiculously villainous their methods of advertising, by unsightly exhibitions of their wares, by pictures and signs, and by use of the daily press, that the respectable practitioners are in a great measure lost sight of, as the true exemplars of our profession in the eyes of, at least the thoughtless portion of the public.

The fact that a competent man should voluntarily become an Ishmaelite, a shyster, a quack, an illegimate member of any guild, the other members of which cannot any longer recognize him as a brother, or even as a friend, in order, forsooth, to secure a kind of business that at best is not desirable, cannot be explained by any other theory than that of total depràvity. Money alone, is indeed, a poor return for the taking of such a course.

I do not suppose there is a man in existence, who, when starting out to earn his living by irregular practice, by quackish methods, if you please, but has said to himself, in all sincerity, I will continue in this thing for awhile until I feel assured that it will be safe for me to reform my ways and become respectable. I shall then adopt and live by the code which governs the lives of the worthy members of the calling to which I belong.

You have all heard the statement, and believe it true, that the streets, and sidewalks, and the floors of the cells of sheol are paved with good intentions.

To him the sweet bye and bye seldom comes. There are many good reasons why he cannot change for the better, one of which is the great hardship imposed on human nature to overcome the laws of natural selection. Another that possibly his income will diminish in the ratio of his reformation; and another reason, saddest of all to the poor heart not grown entirely callous, is the almost universal refusal of professional societies of which he is most anxious to become a member, to receive him into fellowship.

His past misdeeds, like the incubus that continually hangs o'er the head of the legally pardoned convict, are regarded by my unforgiving, and may I say, sometimes mistaken brethren, as sufficient reason for refusing him recognition as a friend and brother.

He *may* join the leading beneficiary societies, become high in the councils of his political party, and even sit under the very drippings of the sanctuary, as one of the strongest pillars of his church. But these honors will be as dead sea fruits upon his lips, so long as the doors which open into the sanctum sanctorium, wherein his earthly desires are centered, are closed to him. Is it any wonder that man continues in his evil ways?

Let us, however, look from the pathetic to the practical. Let us suppose that the horny handed laborer should advertise his services of two days' work for one days' wages; that the grocer will give away a pound of coffee to those *new* customers who will purchase from him a gallon of liquor; that the tailor will present at half the usual price a suit of the finest cloth to the tallest or the shortest gentleman, whose measure he may take during the present week; or that the modiste will attach the most expensive and bewitching passementrie to the dress ordered by the first beautiful woman that may come? Or still farther along, suppose a few of our national banks should state by circular, or by the public press, that they would loan money on reasonably good security to *new* depositors, at, say one per cent.

What would people think of such maneuvering? Would it not appear in each case as though there was some scheme on hand to humbug and defraud? What an infernal jumble there would be if *all*, from the highest to the lowest walks of life, were to present in glaring type the great advantages that each possessed over his hated rivals? Would not the universal verdict be, that everybody had become either a liar or a lunatic?

The honest tradesman, however, having a stock of goods on hand that he wishes to dispose of, even at less than a fair profit, is following legitimate methods by advertising the fact, and does not thereby humiliate the other merchants engaged in the same line of business. Such proceeding is business pure and undefiled, and that kind of man may become a respected member of the cabinet of the President of the grandest nation this world has ever seen. He is privately not ashamed of the publicity given him by printer's ink, and his business competitors are not ashamed of him. Not so with the so-called professional man. He has no goods for sale. His only stock in trade being his own personal ability, or in some cases his own worthless nostrums; and if he be distinguished only, as is generally the case by the amount of advertising he can do and the money he thus can make, his self respect will grow less in proportion as his notoriety increases. His profession to that extent is humiliated, and the real members of it look upon him with the contempt he deserves.

The best judges of what is right, and therefore proper in all our dealings, are those persons who are engaged in the same occupation it matters not what that may be, and are therefore mainly interested in the ethics that are intended to gard its reputation. I would not pay much attention to the criticisms by the popular voice on, for instance, the professional standing of any attorney at law; but would submit my judgment of him without reservation, according to the verdict rendered by his brother members of the bar. Is it not so?

And accordingly, I contend, that the large body of dentists who are not in any sense tainted with the infectious disease of quackery, are the best judges of what is properly related to, and the best guardians of, that passive code of ethics which governs them and who thus strive to elevate the fallen ones to their own position.

There can be no great objection to the dentists living in country towns, who have their names and addresses modestly placed before the public in the daily or weekly press, or in the hotel register, or even in the religious newspapers. Thus far they may go but no farther. But to attach to such a card self laudation, *ad nauseum*, and those horrid pictures, should place them, and does so, beyond the pale of legitimate practice.

Just one instance in point to prove to you that outsiders care nothing for the standing of other bodies than their own. I could read to you, were it not that you yourselves can read them if you wish, the printed recommendations to an itinerant medical lecturer signed by, and shame be upon them, governors of states, United States senators, members of the lower house of congress, ministers of the gospel, editors, judges, public librarians, postmasters, and the mayor of the city in which the lectures take place, but not by one solitary man or woman engaged in the practice of medicine or of any of its specialties. What care these governors, and senators, and editors, and such, for the dignity of medicine and surgery? Plainly nothing.

And while these people, whose official stations I have named, lose our respect to the extent of such endorsement; I feel no little pleasure in the thought that our honored step-mother should, in this manner at least, be compelled to receive the chickens thus coming home to roost. It is well known by us that the average medical man, the world over, indifferent as he is, or jealous of our aspirations, makes no discrimination between the regular dentist and the one whose loud proclaiming of super-excellent ability, coupled with unparalleled reduction in fees, brings to us the blush of shame for both. They will hold consultations with, and patronize the very men whom we cannot receive into or retain in our societies.

It does not follow that either the itinerant lecturer or the braggart advertiser is violating any statutary law, or that he is deficient in ability. He may, in reality, be the peer of the very best practitioner. But *his* ways; oh, they are the ways of unmitigated abomination, a disgrace to the calling he presumes to follow.

Tell me not that *any one* is blameless in adopting such a course. That because the methods of the medical quack are encouraged by many of the best but thoughtless people among the laity; or that many medical men of respectable standing ignore our feelings in the matter, on the principle, perhaps, that misery loves company, is no excuse for us to imitate the humbugs and the charlatans, who in all ages have taken advantage of the cupidity that always attends the infirmities of man, for we know that the field of general medicine, including its specialties, has, from time immemorial, proven, and I fear, will continue to prove for sometime to come, the very best culture for the propagation and growth of these vile bacteria.

Tell me not, that because a contemptable competitor may be one of these, that you must also throw aside your conscience and your honor, to become, as you think him to be, one more living, thriving example of these disreputable human micro-organisms. Remember how bacteriology teaches that the life of the individual bacterium is brief, soon destroyed, by the poison it naturally produces; and the genus man, though an M. D. or a D. D. S. or both, is not exempt from this law of nature; nor as a free agent is he permitted to openly violate the spirit of the golden rule without suffering a corresponding loss of professional respectability.

Gentlemen, these unkind, but not uncalled for, allusions that I have made against quackery in general, have of course, not been directed at any one of you, but for you all, that you may be encouraged in your determination to resist all temptations of a purely sordid character, which oftentimes come to the young professional man beginning his struggle for existence. I do not believe there is one among you who will hereafter prove unworthy of the degree you have received to-night. You are each, one of the elect, whose motto shall always be "noblesse oblige."

That you will remain in touch with each other and with the large majority of your new found brethren, those of us who know you well, can have little doubt.

You have worked within proper lines heretofore. You are now, as it were the selected atoms which shall assist in forming the worthy, satisfied molecules of future dentistry; or in other words, you are, figuratively speaking, an important nucleus of the protoplasmic material of which is being erected, an integral part of the mystical body of true science. Let all the graduates who go forth from this institution, and from others of its kind, do *their* duty, and the coming years are not far distant when your profession will be free from the unworthy members who now disgrace it.

Your income will be as plentiful, and probably much more so, if you adhere from the beginning to your good resolutions, to say nothing of the esteem and respect in which you will be held by the public and by your colleagues.

In concluding, I must venture to offer just one word of advice. As soon as possible, in accordance with your ability to take good care of her, ask the one on whom your affections are placed to share with you the pleasures and whatever there may be of the penalties of life. If you are the right man, the answer will be "yes"; and if possible let your home be such that at its *fireside* there will be no room for the useless pug, or stupid spaniel. In such a home you will find home rule existing in all its beauty and satisfying *rest.* The embodiment of what Henry Drummond in his *Pax Vobiscum* terms the two-fold nature of earthly rest; for rest is not alone *stagnation*, it consists of both energy and tranquility.

Two painters each painted a picture to illustrate his conception of rest. The first choose for his scene a still, lone lake in the far off mountains. The other, grasping the true idea of rest, threw on his canvas, a thundering waterfall, with a fragile birch tree bending over the foam; at the fork of one of the branches, almost wet with the cataract's spray, a robin sat on its nest.

Gentlemen, in behalf of the Faculty, I say to you, one and all, not farewell, but a most affectionate good bye.

RECURRENCE OF DECAY.*

BY F. S. WHITSLAR, D.D.S., YOUNGSTOWN, O.

There is no topic in the realm of dentistry that has continued to excite the scientific interest of dentists more than caries or decay of the teeth. The different theories which have been held and promulgated concerning the origin of dental decay, proves that the problem is no easy one. Among the more important causes which have been assigned for the decay of the teeth, we note the following:

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* Read before the Northern Ohio Dental Association, held at Oberlin, O., May, 1891.

Inflammation, electrolytic decomposition, chemical dissolution, disturbances of nutrition, chemico-parasitic influences.

Bödecker, Heitzmann and Frank Abbot, in their contributions to dental literature, have strenuously advocated the inflammatory theory of decay.

Bridgman, whose treaties won the prize offered by the Odontological Society of Great Britain for the best essay on dental decay, advocated the electrical theory of decay.

Berdmore, who in 1771, by experiments, discovered the action of acids on the teeth, advocated the chemical theory of decay, and up to the present time, perhaps no theory of dental decay has had the approbation of so large a number of able and distinguished odontologists as the chemical, of these the following may be named:

Becker, Magitot, Wedl, Tomes, Schlenker, Watt and Taft.

PARASITIC THEORY OF DENTAL DECAY.

Of this theory Dr. Sudduth says: "Dr. Miller's theory of the formation of cavities by the action of a digestive ferment upon the basis-substance of dentine, has been the only theory ever advanced that explains the formation of cavities."

Dr. Weil writes: "Decay generally begins from without, and must therefore first make its way through the enamel cuticle. I regard it as highly probable that this fungus (Leptothrix buccalis) bores directly through it. The fungi now proceed farther into the enamel and force apart its prisms, gradually breaking up its structure."

Dr. Peirce writes: "I am a firm believer that dental caries cannot progress without these low forms of life."

Black maintains that the chemico-parasitic theory, without a reasonable doubt, gives the true explanation of the etiology of dental caries.

Having thus briefly noticed some of the theories advocated, it is worthy of note that all agree that there is the predisposing as well as the excing cause of dental decay.

As our subject, "Recurrence of Decay," involves a consideration of both, your attention is directed to the following as some of the predisposing causes of recurrence of decay: Inherited idiosyncrasies, faulty nutrition at the time of development, by reason of which the relative proportions of organic and inorganic material needed for an enduring structure fail to be supplied. Crowded and irregular position, broad, grinding surfaces in contact, and broad triangular spaces intervening at the necks of the teeth, which furnish deposits for foreign matter; a want of thoroughness in removing diseased structure in the preparation of cavities, sometimes the result of color-blindness, sometimes to spare the patient the excessive pain accompanying the operation, or perhaps because the patient cannot or will not bear the pain. Sometimes for the sake of our backs we decide that a difficult cavity is ready to fill, when a careful examination of it, after wiping out the cavity with a pledget of cotton or spunk saturated with carbolic acid, might still reveal soft points. Improperly shaped margins, especially at the cervical border, fractured walls, excessive malleting on teeth of soft structure, overlapping and rough margins of fillings, are some of the predisposing causes of recurrence of decay, some of which invite the action of exciting causes of decay. Another cause of recurrence of decay is a lack of repeated, thorough, systematic cleansing of the oral cavity and the teeth, thereby reducing the amount of fermentable substances as to materially diminish the production of acid, which is most active in the nascent state.

"RECURRENCE OF DECAY."*

BY J. G. TEMPLETON, D.D.S., PITTSBURG, PA.

The great Hebrew poet once said in his haste that all men were liars, but if he were now living he might take his time, and say deliberately that most, if not all dentists fail to prevent recurrence of decay in the teeth of all for whom they operate. The latter is a plain statement of facts, however much we may dislike to see our best operations undermined by the dissolving of the lime salts of a tooth, or acknowledge that we have not exercised sufficient care to make contour fillings that will stand the test as "Before Decay's effacing fingers Had swept the lines where Beauty lingers." The occurrence of recurrent caries may be brought about by neglect to observe hygienic care of the teeth after operations for their preservation. Such a class of clients, of course, always expect their dentist to control the laws of nature. We will here mention a few of the causes of recurrent decay, viz., zymotic diseases, impaired nutrition, gestation and lactation and careless and imperfect manipulation by dentists.

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* Read before the Northern Ohio Dental Association, held at Oberlin, O., May, 1891.

A zymotic or exanthematous disease is one in which "there is some morbific principle acting on the organism similiar to a fermet," and includes all eruptive fevers and cutaneous diseases, the teeth being affected on account of their connection with, or being a part of the tegumentary or dermal system.

That the teeth are likely to decay when the nutritive functions of the system are impaired, goes without saying.

In gestation and lactation the mother's system is so largely drawn upon by the increased demand for the phosphate of lime that the teeth fail to receive their accustomed supply. Hence, in the teeth of such of our patrons we find new solutions of continuity and recurrence in proximity to fillings.

Recurrence is very often due to lack of care or thoroughness where most needed. Such places are the cervical wall, particularly in bicuspids and molars, also the side of the cavity next to the operator. Special attention must be given these points, both in the preparation of the cavity and in packing the gold, otherwise there will be imperfect adaptation of the filling with the walls, leaving small spaces. However minute these spaces may be they will be sufficient to permit the ingress of moisture and recurrence will ensue.

Great care is likewise to be observed in packing gold against the walls of any part of the cavity to prevent the point of the plugger from coming in contact with the tooth structure.

The cervical wall should be covered with heavy tin foil and condensed or packed down with smooth-pointed instruments, thus securing the best adaptation, and also the preservative qualities of tin at the point most likely to be attacked.

Approximal cavities of bicuspids and molars should be prepared so that there will be no contact of tooth surfaces after the fillings are finished.

Our duty is to do all we can to prevent, and yet we cannot control the laws of nature because *change* is written on her face. Hence, oftimes we'll see where least desired or expected the "Recurrence of Decay."

DISCUSSION.

Dr. C. R. Butler, Cleveland, said he had tried to head off the recurrence of decay by placing tin at the cervical border on account of its conserving power, and making the major part of the filling of gold. This he said was not always successful as there had been recurrence of decay after this course had been pursued. He thought if we could manage the laws of the system and control the environments so as to neutralize the fluids of the mouth, we might be able to prevent the recurrence of decay in more instances than at present. The cases hardest to control seemed to be those in which particles of food were retained between the teeth week after week, and where we were able to detect that there was something wrong with the general health of the system. If we could control the cleansing of the mouth we could do much more in the management of these cases. He said he found another class of troublesome cases where the dentine loses integrity or the nourishing currents become clogged and the tissue breaks down. The recurrence of decay in such instances no one can see or guard against. The mouth and teeth may be cleansed as much as possible, yet there is a recurrence after a certain amount of surface has been exposed. The progress of this decay may be slow or rapid according to the condition of the general system.

Dr. Geo. H. Wilson, Painesville, thought there was one point about which we cannot be too particular, the shaping of the cavity and proper contouring of the filling. The actual point of contact is not where the decay begins, but just at the side where there is retention of fluids by capillary attraction, and by properly contouring we do away with this vulnerable point. In disease and old age where the teeth begin to disintegrate and there is a wasting of tooth substance which we cannot overcome, we should call attention of our patients to the fact and give them to understand that they must not expect too much from us; that we will do all that can be done, and if failure occurs it will not be our fault but due to the abnormal conditions under which we are laboring. He spoke of the theory set forth that alkalies were more destructive to tooth substance than acids, but he favored the acid theory of Watt, and concluded by saying that as we cannot overcome the formation of these destructive agents, we must do the best we can to protect the parts by the proper contour of fillings.

Dr. C. D. Peck, Sandusky, cited a patient whose teeth were badly decayed and of poor quality, a characteristic of the whole family. One lower molar was so badly decayed that nothing but thin shelled walls remained, but the pulp being alive he concluded to fill with amalgam in preference to crowning. After a lapse of four or five years he saw the case and to his surprise the amalgam filling stood as solid as when inserted, while the tooth substance had disintegrated around all of the gold and gold and tin fillings that had been inserted at the same time.

Dr. W. H. Fowler, Painesville, said he used to advocate nothing but gold for filling, but had found that many times in large cavities amalgam proved better than gold. He thought that in building up these large fillings there was a tendency to overdo by using too much mallet force thus checking the tooth enamel, while with amalgam but little force was used and there was no liability of such fractures.

Dr. R. A. Dinsmore, Cleveland: A great deal depends upon the material used for the filling. Where the teeth are soft it is not advisable to use gold especially in the teeth of young persons.

Dr. Chas. Buffett, Cleveland, failed to see the force of capillary attraction. If the whole mouth is bathed in moisture he did not see how one portion could be more destructive than another. He thought the destructive action was due more to the action of acids in their nascent state. That the decay might be prevented, to a certain extent, by the use of mouth-washes, antiseptics, etc. He thought it our duty to see that patients use the brush regularly and toothpick as well.

Dr. George H. Wilson, Painesville, thought that capillary attraction did more harm than all were disposed to suspect. At the point where capillary attraction takes place there is little chance for circulation or change of fluids, and in consequence decomposition goes on in these fluids so held, and destructive influence is manifested at that point.

Dr. H. F. Harvey, Cleveland, had seen cases where decay began and then stopped. Certain conditions of the system seemed to make the difference in its progress. As to recurrence proper he thought that defective manipulation in some detail seemed to cover the ground.

Dr. Henry Barnes, Cleveland, cited a case in which four tin fillings in the grinding surfaces of molars had been doing good service for 50 years, while other fillings made of gold at the same time had been replaced several times on account of recurrence of decay. In this case it seemed to be due in almost every instance to the receding of the gums. He cited another case, that of a boy whose mouth contained a gummy mucus. He found that the boy was fond of oatmeal mush well sweetened with sugar, and it was a question in his mind whether this did not assist the recurrence. He believes that thorough cleanliness is indespensable as a means of preventing recurrence. Also believes in properly contouring to prevent capillary attraction.

Dr. W. H. Whitslar, Youngstown, said that recurrence of decay was often due to faulty manipulation. He thought the point in Templeton's paper regarding the recurrence of decay at the wall nearest the operator was well taken. For instance, in a right superior central incisor it is not always the cervical border that fails for we sometimes find that recurrence of decay is first manifested at the border next to the operator down near the cutting edge of the tooth, probably on account of this portion of the cavity not being so easy of access when inserting the filling.

Dr. Henry Barnes, Cleveland, cited a peculiar case where a tooth had been broken off five years before. It had been broken through the pulp-chamber and below the gum on the labial side fully 1-16th of an inch. When he came to operate he found a live nerve and then tried wiring the tooth but could not do so satisfactorily. He finally extracted the tooth and fonnd a complete protective covering over the nerve and it looked as though nature had tried to unite the broken parts.

Dr. C. R. Butler, Cleveland, said he had seen this case and also another in his own practice where the tooth had been broken and nature had tried to unite the parts.

Dr. T. S. Seely, Norwalk, said there seemed to be no doubt but that recurrence of decay was occasioned by too often sizing up the patient's pocket-book rather than inserting the most suitable filling material.

Dr. C. R. Butler, Cleveland, said: Did you ever think that whoever the patient is, whether worth five cents or fifty thousand dollars he is at your mercy? He came to have the tooth saved or relieved from pain, and if he can trust us to perform a valuable service the fee attached is of secondary importance. You can swindle one hundred times more by poor service than by what you overcharge. The question of how little or how much that patient can afford to pay has nothing to do with the kind of service we should give. I have been disgusted with men who have put gold into children's teeth where tin or something else would have been better, simply because their folks were able to pay for it. Let us exercise the best skill we have and let the people know that we are masters of what we profess.

Dr. T. S. Seely, Norwalk: The Doctor misunderstood what I intended. I meant it is as much of a study to learn with what to fill in the different conditions of the mouth and teeth as to properly insert the filling.

NORTHERN OHIO DENTAL SOCIETY.

JOTTINGS.

The society numbers 78 members.

Prof. Wright's address was fitting and interesting.

Due respects were given Drs. Atkinson and Stephan.

The College Glee Club songs were appreciated and loudly applauded.

The election of officers occupied only 14½ minutes. Other societies give ear.

The young men were in the majority. This is the interest we like to see manifested.

Dr. Barnes "kodaked" the only charter members present — Drs. Butler, Siddall, Palmer, and Terry.

A vote of thanks was extended the Protective Association for what they have done for the profession.

There were no "wind-bag" discussions, all were to the point and practically put, a thing much to be desired.

President Whitslar presided with dignity and distinguished himself with his splendid, timely, and fitting remarks.

New members elected were Drs. H. G. Husted, D. S. Husted, and W. A. Siddall, Oberlin; R. A. Dinsmore, Cleveland, and W. T. Binzley, Napoleon.

The engravings drawn and used by Dr. W. H. Whitslar, 43 in number, in the illustration of his subject, are undoubtedly the finest collection to be found.

Dr. J. F. Siddall (accent on first syllable) gave an interesting demonstration of the correct method of tooth-brushing. In connection with this he should also have demonstrated the use of the "tooth-pick" exhibited by Prof. Wright.

A noticeable feature was the business-like way in which the meeting was carried on. Promptness and system are the secrets of accomplishing two day's work in one. Our State and other societies would do well to take example.

Prof. Wright exhibited several interesting specimens, among them a stone mortar taken from Table mountain, out of a mine which had been run under a lava bed to the depth of 250 feet. This mortar is of a spherical form with a cavity in one side four and one-half inches across the opening and three inches deep, rounded out smoothly, leaving a shell varying in thickness from half an inch at the rim to an inch and a quarter in the bottom. It is believed to be contemporaneous with the "Nampa Image" and "Calaveras skull" discovered in that region, which have awakened so much interest among scientists. Prof. Wright heard of it while on his western tour last summer and by a fortunate train of circumstances, has secured the absolute ownership of this valuable specimen of the work of our predecessors on this continent, who are supposed to have lived many thousand years beyond the earliest period recorded in any known history.

The officers elected for the ensuing year are as follows: President, Dr. J. F. Siddall, Oberlin; Vice-President, Dr. W. H. Whitslar, Youngstown; Cor. Secretary, Dr. Henry Barnes, Cleveland; Rec. Secretary, Dr. H. G. Husted, Oberlin; Treasurer, Dr. Chas. Buffett, Cleveland.

Next meeting to be held at Cleveland, in May, 1892.

A WOMAN'S BUSTLE AS AN ANVIL.*

BY C. M. WRIGHT, D.D.S., CINCINNATI, O.

I have a new and valuable appliance in use in my laboratory, which I think is patentable, but I have received so many useful hints about methods, instruments and practice from members of the 7th District Society, that I should feel ashamed of myself forever if I did not give this away to them as freely as I have received.

Years ago, when I was a student in Dr. Keely's office, in Oxford, O., we had, in an outside laboratory where the forge stood, a blacksmith's anvil with one horn broken off, weighing from one hundred to two hundred pounds, securely fixed to a block of wood as large as a butcher's block. Our sledge hammer was a ponderous affair, and "swedging" a plate was a mighty and muscular effort. When Keely or his student swaged a gold or silver plate, the people of Oxford recorded "another earthquake," the church bells, and the old university bell gave out solemn sounds from the concussion of the air and the jarring of the earth. This was my first introduction to the anvil chorus. Afterwards, in Dr. Cameron's office in Cincinnati, while our anvil was formed of a bright cube of steel set in a handsomely turned log of wood, yet when we swaged up a plate, the buildings in the neighborhood tottered on their foundations,—ceilings caved in, chimney pots tumbled over, and general havoc was played for squares around. Dr. H. A. Smith, who was located on 6th street a quarter of a century ago, and who was then, as he is now, a gentleman of a peculiarly sensitive nervous organization, kept a private anvil in the cellar of his house, and used to retire underground whenever he had a plate to swage. The surface of the earth was less agitated in his neighborhood, but in his office muffled sounds used to come up out of that cellar, that would freeze my young blood—make each particular hair, etc. I never saw his anvil.

Later, as the years rolled on, I had opportunities for observing the same sort of blacksmith exercise in Dr. J. A. McClelland's laboratory in Louisville, in Van Marter's laboratory in Basel, Switzerland, in the Ohio College of Dental Surgery, and in various other laboratories.

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* Read before the 7th District or Southwestern Ohio Dental Society, Xenia, May 19, 1891.

A few years ago, Prof. Bell, a bachelor who lived in fear of his landlady's tongue, showed me "a way of swaging up a plate without knocking the plastering off of the room below." He doubled up an old railroad guide-book and holding it on his knee placed the die and counter-die upon it, and with an ordinary hammer swaged up his plates. He claimed the invention of the "railroad-guide-book-anvil." I adopted this in my practice and was much pleased with it. At last, however, there came a time when I couldn't find a railroad guide-book when I wanted to swage a plate. I tried folding up dental journals, stiff newspapers, paper covered novels, etc., but with indifferent success. The railroad guide-book seemed to be a necessity—but "necessity is the mother of invention," and my necessity was in labor—she has produced the anvil of the future. The chorus must be left out. I obtained a woman's bustle, stuffed closely with curled hair (the bustle not the woman), to this is attached at either end a strap or band with a buckle at the end of one strap. This I buckle about my leg just above the knee as I sit at my work-bench. The convoluted, or ribbed, or corrugated surface of the bustle or cushion presents a first-class surface for holding the heavy lead counter-die. The cushion is secured to the leg and does not fall to the floor every time you move, as did the railroad guide-book, and with a light, one pound hammer I can swage any plate and not cause the slightest jarring of the house. A baby asleep in my laboratory would not wake up from the noise. It is so scccessful, such an improvement on the old style, so much less like blacksmithing, so neat and handy, that, now that bustles are out of fashion as bustles, I hope that the dental depot men will buy up a lot and sell them cheap to dentists as anvils.

In bridge-work, in shaping instruments on a small bench anvil, and in fact, in a lot of operations which we are doing or having done in our laboratories every day, the noise of the hammering is sometimes very trying. For all such operations the Bustle-Anvil is a wonderful improvement. If you have a small laboratory, or a case for laboratory work in your operating room, you don't want to make a noise like a carpenter driving nails, or a man riveting boilers. It isn't refined and delicate, it is coarse and clumsey. Well, hook on a woman's bustle and do your pounding on your knee. The heaviest plate can be swaged without a sensation in the leg, and the plate, too, seems to sink into its place so much more readily. The force seems to be so much better directed and less scattered. In the correlation of force, noise seems transformed into pressure. Try it. If you can't find a discarded bustle, make a cushion to fit the leg, upholster or stuff it with curled hair or excelsior, have tapes attached to it so that you can tie it around your leg, and you are fixed to avoid noise and shock.

SEVENTH DISTRICT OHIO DENTAL SOCIETY.

The third annual meeting was held in the parlor of the Hotel Bradley, Xenia, Tuesday, May 19, 1891. The President, Dr. L. E. Custer, of Dayton, called the society to order at 10:30 A. M. There were present Drs. J. Taft, Will Taft,* O. N. Heise, C. M. Wright, J. R. Callahan, of Cincinnati; L. E. Custer, W. E. Tizzard, H. B. Story,* J. M. Coy, J. L. Zell,* of Dayton; George Watt,† Geo. L. Paine,† W. H. Sillito, of Xenia; J. F. Dennis,* C. V. Lanum,* of Washington C. H.; B. F. Johnson, of Camden; C. I. Keely, of Hamilton; C. R. Converse,* of Springfield; T. G. Dennis, Jamestown; and Mrs. Custer, Mrs. J. Taft, Mrs. Sillito, Mrs. Will Taft.

Mr. D. D. Richardson, of Connable and Harper, Xenia, made an interesting exhibition of electro-surgical appliances, storage batteries, mouth lamps, etc. Dr. L. E. Custer showed regulating apparatus and casts of cases; pluggers made from a pair of Moore's scalers for filling between edge of cavity and the matrix; the crown and part of roots of a molar tooth which had bursted from the expansion of a large gutta-percha filling in the canals and pulp chamber — the gutta-percha was covered with an amalgam filling; also a block of two bicuspids, gum teeth, one with a gold crown neatly fitting over it. W. H. Sillito showed a number of new clamps made by J. W. Ivory: casts of the mouth of Prof. Alonzo, of Xenia, now with Sells Bro's circus, with a photographic view of Alonzo's feat of holding two heavy men on a barrel by a strap in his mouth.

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* Elected to active membership at this meeting.

† " honorary " " "

Dr. George Watt read a paper on Dental Societies which will be found in the August Editors' Specials; and

Dr. J. Taft said, the great majority in the profession are strangers to its early history, struggles and difficulties; how and by whom overcomel If they would read this in the journals of that time, they would better understand its aims and future attainments. The changes of opinion have been many and great. Ideas of recent origin, and now held by many, are wide of the mark, and if entertained by the profession in its early days would not have brought it to the high position it now occupies. These views have degraded the profession and the estimate of what a professional man should be. Many young men are greatly lacking in professional ethics. To help form the professional character and views of the students, each college should provide for two or three lectures on the early history of the profession and its great men — Harris, E. Parmly, Tucker, Flagg, and others. Societies should make more efficient provision for clinics that men proficient in the chosen line could make their specialties familiar to their less favored brethren. The trend of thought in this direction is shown in the discussions in the Southern Dental Society of a Dental Chautauqua, Dr. Bödecker's offer of $5000 toward a Dental Institute, and the paper and discussions at the last meeting of the Ohio State Society on the subject. These propositions all referred to instruction not for dental students, but for the busy practitioner, thus enabling him to keep pace with the advancement of the profession.

The President, Dr. L. E. Custer, of Dayton, read his annual address as follows:

Two years is such a short time that it will not be necessary to detail the account of the origin of the Seventh District Dental Society. Those who were present at the State Dental Society at Cleveland, will recall the action of that body at that time in regard to the relation of this society to it. We were created at the request of the State Society and then left to dig for ourselves without any other aim than that of any local society.

As I understand, there was, up to the time of this division of the State into district societies, a local society, which convened annually at Dayton. I refer to the Mad River Dental Society.

This I am told was a very active society and was attended by dentists from the whole west and southwestern portion of the State, often some coming from greater distances and other States. It was very much like the Northern Ohio Dental Society. Since the organization of the State into district societies the Mad River Society has not convened; whether this is because of the death of its president, Dr. Bradley, or it is swallowed up in the Seventh District I cannot say.

The fact remains, however, that since the section of country just north of us failed to form a district society, those dentists who were formerly active in the Mad River Society have no local society.

The advantages of a local society are different from those of a larger one. Dentists will attend this where they will not another. The subjects treated, in general, are more practical than in the State or American Society. Appliances are shown here which the author thinks too inconsiderate for a large society, but which often are of infinite value.

I am not in favor of multiplying dental societies. I think we have too many already. I am, however, in favor of increasing the attendance and the quality of the proper number.

A local society, since it is of only a day's length, should be held as near the center of population as possible, and at the same time should have such railroad facilities as to be accessible from all other points by 10 o'clock that day.

I would suggest that if the Mad River Society will not revive, that the counties Miami, Darke, Champagne and Clarke just north of us, be united in the Seventh District, so that we can have those dentists from Springfield, Urbana, Piqua, Troy, etc., who it seems have not been strong enough to form a society of themselves. This would then comprise about the area of the old Mad River Society and be better for all concerned by increasing our members and securing the talent of these brethren.

Considerable discussion followed, resulting in the appointment of a special committee, consisting of Drs. J. Taft, W. H. Sillito, and J. R. Callahan, to confer with the State Society on the subject of District Societies, and report at the next meeting.

The "question box" was now opened.

"*What has been done with the proposed amendments to the Ohio dental laws?*"

Dr. J. Taft said the law had been introduced and referred to a committee in the House of Representatives. The committee had agreed to report it unanimously, but Mr. McMakin, in whose hands it was, had been unable to do so.

Dr. C. I. Keely: The only opposition so far developed was from the speaker who refused to recognize Mr. McMakin. The members all seemed favorable to the law.

"*Is the use of bridge-work on the increase, and is it desirable that its use should increase?*"

Dr. J. R. Callahan said his experience and observations with the bridge-work of others had convinced him that it was not desirable either in his own mouth or those of his patients. Some of the most filthy pieces were gold cap bridges, partial and full dentures.

Dr. J. Taft thought it criminal to insert bridges by cutting away sound teeth, such as bicuspid porcelain bridges with pins running into slots in sound teeth. Some cases he had seen were in the most villainous condition possible. Could smell the foul odor as soon as soon as the patient opened the mouth, but the same condition may be noticed in full dentures on rubber, gold, porcelain, celluloid, etc. There is no necessity for it in any case. It may be sometimes the patient does not use it in mastication at first, because it is a new thing, permanently fastened, or a little sore; they fail to cleanse it properly for the same reasons until the neglect becomes habitual. Like filling and other operations, much of it is put in without proper preparation of the mouth or instruction of the patient. They should be taught how to properly cleanse such work.

Dr. Sillito: Then like filling and other operations it is a matter of judgment? Isn't peroxide of hydrogen a good cleansing agent?

Dr. Taft: Like everything we do it should be a matter of judgment, of course. No, the patient should be taught to keep the mouth and the teeth clean without such an agent.

"*What is the best plan of restoring color to 'dead' teeth?*"

Dr. J. R. Callahan: Have used the chloride of aluminum. The teeth bleached nicely, but in a few weeks turned yellow. Know of no "best plan" or any successful one. Have used Labarache's solution, and, where iodine was the staining agent, alcohol.

Dr. Sillito: Ammonia is better than alcohol for bleaching iodine stains.

Dr. Will Taft: Have cured alveolar abscess and successfully bleached the tooth with the chloride of aluminum. It is all nonsense to close the apex of the root before treating—I never do.

"*Has any one present ever had, in practice, a case of facial nenralgia in which he had reason to believe the presence of amalgam fillings was the exciting cause?*"

Dr. C. M. Wright: Have had a lot of cases where amalgam was the cause of facial neuralgia. Took out the fillings and filled again with amalgam and the patient got well.

Dr. J. F. Dennis: Sixteen years ago I had a patient with good amalgam fillings in his teeth. The teeth, the patient said, felt as if ready to burst. Took out the amalgam, refilled with gold and the teeth have been comfortable ever since.

Dr. Will Taft related the case of a young man, a Harvard student, suffering from facial neuralgia which began after an attack of the measles. He couldn't eat or sleep—had worn the carpet in his room threadbare where he walked. His eyes failing him, he came to Cincinnati to have them examined by an oculist. The latter sent him to me. Found excellent fillings—good work that would pass anywhere. There was one large amalgam filling in his mouth. While in the office he had a paroxysm that made him dance. Took out the amalgam and treated cavity with carbolic acid. At first got no relief, then put in an oxyphosphate cement filling and has had no return of the neuralgia. The patient has written his experience in detail which I expect to publish when sure of a cure in the case:

Dr. Geo. Watt narrated several cases of ptyalism and neuralgia caused by amalgam fillings.

"*What has been the experience of those present in the use of copper amalgam?*"

Dr. J. R. Callahan: Wish I hadn't used it as much as I have.

Dr. Will Taft: There is not enough difference between the lasting properties of copper amalgam and oxyphosphate cements to make the former desirable.

Dr. Callahan: The oxyphosphates leave the teeth in better condition than does copper amalgam.

Dr. C. M. Wright: Have used it and dropped it and used it again. I consider it simply a dressing—temporary. Gutta-percha is more lasting. It is a most uncertain and unreliable filling. If we use it as a germicide, expecting it to wash out, we can't get a better microbe killer.

Dr. J. Taft: Haven't used amalgam yet. I find it necessary to say so occasionally because every now and then some patient is almost willing to make oath that I put an amalgam in their mouth. Even if cements and other like materials were not better for filling teeth I should not use amalgam and as it is there is no necessity calling for its use.

The American Medical Association.

Dr. J. Taft: The recent meeting at Washington, D. C., was not as well attended as usual, but the leading men were there, and as the work of the Association is done by sections, the results were good. The Dental Section was not largely attended, however some very good papers were read and there were interesting clinics and exhibition of new appliances. It would be better for the profession if dentists associated more than they do with medical men. There is no reason why the dental section should not compare favorably with the other sections, at least in the number in attendance. I hope next year that as many of you as possible will arrange to attend the meeting which will be held in Detroit. And also bear in mind from now on the Columbian Dental Congress to be held in Chicago in 1893.

The officers elected were: President, Dr. O. N. Heise, Cincinnati; Vice-President, Dr. B. F. Johnson, Camden; Secretary, Dr. J. R. Callahan, Cincinnati; Treasurer, Dr. C. I. Keely, Hamilton; Executive Committee, Chairman, Dr. L. E. Custer, Dayton; Dr. Will Taft, Cincinnati; Dr. J. F. Dennis, Washington C. H.

Next meeting at Washington C. H., the third Tuesday in May, 1892.

Notes—

"Good morning, have *you* used" copper amalgam?

"Two of a kind"—copper amalgam and bridge-work—the one dirty, black and deceptive; the other filthy and unreliable. Are our dreams to be ever thus rudely dissipated?

Dr. C. M. Wright had "la grippe," and a member, after hearing his paper on the Bustle-Anvil, wants to know if he hasn't a cork leg? Will Dr. Wright please answer.

"It reminded me of the good old times to have Dr. Watt read a paper," said one.

The discussion of the State Society's indifference to the "Deestrick" societies raised quite a breeze.

Why not arrange for a *two day's meeting* at Washington C. H.?

Dr. E. G. Betty was conspicuously absent — at Put-in-Bay a fishing for black-bass and, said a member, jack-pots. We don't know what kind of a fish a jack-pot is, but we are willing to try one if Ed. will send it, prepaid.

We are told that one member and his wife, in the hurry of departure, forgot their youthful son and heir—went back for him and got away at last minus only an umbrella—which last doesn't count.

The social features of the meetings should be cultivated. We hope the executive committee will invite the ladies next time.

The members all seemed well pleased with Xenia, and wanted to keep right on meeting there.

THE VAPOR METHOD AND SOME CASES IN PRACTICE.

BY SAMUEL A. MILTON, D.D.S., CLINTON, MO.

It is bad education and discipline for patients, and worse practice for dentists, to do permanent injury to secure temporary relief from pain or annoyance.

In exceeding sensitive teeth it is urgently demanded by many patients that immediate relief from pain be given, and we are almost driven to risk desperate means to accomplish the result. It is better in this, as in the case of valuable teeth that are aching, to have that discipline in our practice, that will make a patient feel that we have done them a valuable service in saving, rather than extracting his tooth, though it be at the expense of some pain and inconvenience. This leads me to say that any method of obtunding sensitive dentine at the probable, or even possible expense of the life of the pulp, is an incorrect one and is bad practice.

The method I employ is by the introduction of the warm vapor of volatile oils, as clove, peppermint, and is supplemented with a strong degree of force which causes an absorption of the vapors by the nerve fibers. While the method is not absolutely certain of success, as an obtunder in every case, it palliates the pain in all cases and in no way possibly endangers the life of the pulp. The apparatus used has a descriptive illustration in the *Cosmos* for Nov., 1890, and May, 1891. This method is valuable also in the introduction of antiseptics in root canals.

The value and correctness of the practice of driving with force vaporized antiseptic agents in the root canals can be illustrated by any one in this way. Attach a suitable nozzle with rubber tubing to a foot bellows, and blow with force in a root canal where there has been a putrescent pulp and all possible care has been taken in cleansing and in the introduction of best antiseptic agents; the odor will be a convincing proof of the failure in this, that is now passing for good practice simply because the endorsed antiseptics have been used.

The method of driving out the last vestage of septic matter whether liquid, solid, or gaseous, and at the same time to place the entire root canal and tubuli in antiseptic condition is certainly good practice. Since adopting this practice, "sore teeth," after root canals have been filled or crowns set have nearly become "a thing of the past." I have been greatly benefited, too, in opening into putrescent pulps where periodontitis has set in, and it is nearly beyond question for the patient to have the tooth touched.

Chloroform vapors are thrown in the cavity with a strong force and they soon dissolve and penetrate, and it is quite clear that where the vapors go in gases can come out, and in this way the aching is immediately relieved without excavator, drill, or other painful mechanical force; and the soreness has sufficiently subsided by the next day to fully open clean and introduce the desired antiseptic without inconvenience or pain to the patient. After abstracting abscessing teeth chloroform vapors give such complete relief that no patient ever leaves my office with pain, even in the severest cases. These outlines are hardly a beginning of the value of this plan in practice.

Some cases: A young man with a chain of small saucer-shape labial cavities in the two central incisors, exceedingly sensitive, were prepared without the slightest pain by the use of vapor or oil of cloves.

A young lady came from an adjoing town with a putrescent pulp (a posterior proximal cavity) in a right inferior sixth year old molar; tooth could not be touched with tongue or fingers without pain; cavity was washed out with warm water, the chloroform vapors introduced, and though my face was nearly two feet away I caught the odor that proved the effective work of the chloroform. Next morning she reported no pain after leaving the office though unable to sleep the night before, and the soreness had nearly all subsided.

A young girl had an abscessing tooth abstracted. She suffered great pain and was very nervous, though chloroform on cotton was put in the socket; the obtunder was then heated and chloroform vapor introduced, and within twenty minutes the pain had nearly subsided, and the girl had become perfectly calm, showing no signs of former nervousness.

A baggageman was struck in the mouth with a trunk breaking off two of his inferior incisors, causing great pain. He went to the office of Dr. Neil, who uses one of the obtunders, chloroform vapors were thrown on the exposed pulps. The patient told me the next day that his pain was gone in two seconds.

Hundreds of striking cases could be given, but these as clearly prove that the plan and principle are correct as a greater number would. I use an air-pump and a compressed air cylinder for my pressure.

THE INTERNATIONAL TOOTH CROWN CO.

vs.

E. S. GAYLORD, ET AL.

A COMMUNICATION FROM THE DENTAL PROTECTIVE ASSOCIATION OF THE UNITED STATES.

THE following is a brief review and summary of the recent litigation of the International Tooth Crown Company *vs.* Edward S. Gaylord, et al, recently ended by a unanimous decision from all the Judges of the Supreme Court of the United States, in which the Richmond Crown patent and the Richmond patent on Preparation of Roots for Crown, were declared invalid. This is the case that the Dental Protective Association of the United States took up and defended in the Supreme Court, in association with, and at the request of Dr. Northrop's committee. I will state that by the result of this decision, all forms of Richmond Crowns are now open to the dental profession for manufacture and free use, as well as the Richmond method or process of preparing roots for his crowns, which was a patent for freezing and cutting off the tooth and driving the pulp out and immediately filling the end of the root at one operation. The decision of the Court occupies a number of printed pages, but in substance, is as follows:

First.—That what Richmond had done before the taking out of his crown patents disclosed substantially whatever invention there was in his crown, or process of making, and this invention had been in successful use over two years before being patented, consequently has been dedicated to the public. Some later changes in construction was made the claim for sustaining the patent; the claim being that only after these changes were made was the invention a success, and that it was in use only as an experiment before, to which the Court said—

That whatever changes were made as appearing in these patents, from what existed before and was known to modern dentists, was not invention in the eye of the patent law but simply the mechanical skill of a skillful dentist.

While this decision is of incalculable value to the dental profession, it must not be forgotten that the decision does not end, by any manner or means, the litigation between the International Tooth Crown Company and the dental profession. That company owns some twenty-five or thirty other patents relating to dentistry, some of these being in suit. One of these patents known to the profession as the "Low Bridge" was sustained in Judge Wallace's United States Court in the Southern District of New York, some four or five years ago, and before the Dental Protective Association of the United States was organized. And the Dental Protective Association is now engaged in an extended and expensive contest in the Federal Courts, to secure its defeat and to have the same judicial declaration of invalidity declared against it by the United States Courts, as has just been obtained upon the cases referred to.

We stated in our former circular that any one not a member of the Association before May 15th, if sued after that date on the Richmond Crown Patents, would not receive the defense of the Association, but as we have wiped out the Richmond Crown patents, this limit to membership is removed and any one not a member can still have an opportunity of joining. We feel justified in saying that it is asking but a little of each one to send in the ten dollars membership fee, and do their part in this great work, which is so well begun, of freeing us from bondage. The next great battle which we now have with the enemy, is defeating them in suits brought upon the Low Bridge patent, which will be made the basis of another circular and communication with full information within a short time.

Hoping for a favorable response from each one, I remain,

Yours truly,

J. N. Crouse, *Chairman*.

Editors' Specials.

"Write the Vision and make it plain."

OBITUARY.

JAMES W. WHITE, A. M., M. D. D. D. S.

When, suddenly and in the midst of a useful career, a man is stricken down, who for years has been so active and well known in the busy affairs of life as to seem to be doing the work of many men, it is a great shock, not only to the profession and the community in which he labored, but individually to hundreds throughout the land, many of whom never met him. Such was the death of the editor of *The Dental Cosmos*. He was always foremost in good works and his loss will long be felt both in and out of the profession. *The Philadelphia Ledger* says of him: "His entire life has been one of philanthropic work, and he has been not merely a generous giver, but a close student of the best means of conducting systematic charity and the best methods of correcting the evils that result from poverty. Dr. White was a man of strong convictions and courageous in upholding his opinions. He was pre-eminently unselfish; personal sacrifice was to him a pleasure if it promoted the good of others."

Dr. White, born in 1826 in Bucks County, Pennsylvania, was the son of William Rose, and Mary Stockton White, descendants of the earliest settlers of Virginia and New Jersey. He was a brother of the founder of the business now known as the S. S. White Dental Manufacturing Company, and president of that company from its organization in 1881 until his death. "His relations with his employes were of the most kindly and pleasant nature. From the highest to the lowest in the great establishment the feeling towards him was that of sincere friendship, and in his death they mourn a friend whose hand and counsel were always at their call."

In 1847 he was married, at Philadelphia, to Mary Ann McClaranan who survives him with their three sons—Dr. J. William White, Professor of Clinical Surgery in the University of Pennsylvania; Samuel S. White, of Patterson and White, printers; and Louis P. White, wholesale jeweller.

Besides editing *The Dental Cosmos* since 1872, and being the executive head of the great manufactory, Dr. White was the senior in the firm of Hance Bro.'s & White, manufacturing chemists; moderator of the Universalist church of the Messiah; one of the organizers and the president of the Maternity Hospital; a director of the German-American Title and Trust Company; treasurer of the Siberian Exile's Relief Association; he managed for seven years, during the anti-slavery agitation before and during the war, the People's Literary Institute; as chairman of the committee of the Sanitary Fair on Orations and Lectures secured $10,000 for that undertaking; an active worker in the Freedman's Aid Society; and chairman of the lecture committee of the Republican Invincibles. From April, 1887, to May, 1889, he was president of the Department of Charities and Correction.

He received the degree of M. D. from the University of Pennsylvania; the honorary D. D. S. from the Pennsylvania College of Dental Surgery; and that of A. M. from the St. Lawrence University, of Canton, N. Y.

Dr. White died of apoplexy Wednesday, May 27, 1891. In the winter he had a severe attack of what was diagnosed as rheumatism of the throat from which he had slowly recovered. Tuesday he complained somewhat of an uncomforable feeling about the heart, but continued in his office all day. Wednesday morning, on arising, he spoke of feeling "dyspeptic," and shortly afterwards, while adjusting his shoes, fell forward, dying in a few moments.

The funeral took place Friday afternoon the interment being in Woodlands Cemetery. The pall-bearers were Mr. George W. Childs, Dr. D. Hayes Agnew, Mr. Horace Howard Furness, Mr. Joseph C. Fraley, Dr. H. C. Wood, Dr. Louis D. Harlow, Dr. George W. Ellis, Mr. Samuel T. Jones, Mr. G. R. Bingham, Dr. W. Storer How, Mr. John H. Long, Mr. Edward H. Hance.

OBITUARY.

DR. FRANK C. RUNYAN.

The afternoon of June 4th, 1891, our friend and former pupil, Dr. Frank C. Runyan, for many years a leading dentist of Springfield, Ohio, passed from time to eternity, after a lingering illness of many weeks duration. When a boy he was accidentally struck on the leg, bruising the periosteum, and the leg ever after pained him. Finally came necrosis. Excision of the dead bone and skin grafting were resorted to but without avail, and then amputation. The shock proved too severe for his enfeebled condition, and he sank to death under it.

> "Green be the turf above thee,
>   Friend of my better days;
> None knew thee but to love thee,
>   None named thee but to praise."

In the manifestation of cordiality and friendship, Dr. R. had few equals in the profession. Some are good because they are not bad; some friendly because not unfriendly. Not so with Dr. R. His traits of character were positive quantities. He was a gentleman because he was manly and genteel, and not because he had studied the rules of fashionable politeness and practised them.

He leaves a wife, Mrs. Georgie D. Runyan, the daughter of James Drury, the celebrated Ohio weather prophet, and herself a literary celebrity.

What We See and Hear.

[We are always pleased to receive short, practical articles for this department, and invite any to send brief descriptions of such appliances, devices, methods, remedies, etc., as will be of interest to the profession.]

RUST may be removed from finely polished steel without injury to the surface by cleaning the article with a mixture of ten parts of tin putty, eight of prepared buck's horn and twenty-five of alcohol, and then rubbing with soft blotting paper.

MICA MATRICES.—The mica matrix is furthermore useful in operative dentistry, for the reception of any of the plastic filling-materials; and for these purposes its nature, pliability, and extreme thinness admirably adapt it.—R. WALTER STAR, *Cosmos.*

TO REMOVE THE ODOR OF IODOFORM FROM THE HANDS.—For this purpose Bienert recommends (Pharm. Zeitschr. Russl.) washing the hands once or twice with flaxseed-meal in water. He states that the odor very quickly disappears.—*Duetsche Med. Zeitung.*

CORUNDUM WHEELS.—Keep your corundum wheels wet with water containing a few drops of alcohol. If they have become gummed, soak in a solution of caustic potash, afterwards washing in weak alcohol. The treatment is old, but none the worse on that account.—*Odont. Jour.*

IODINE AND GLYCERIN.—Tincture of iodine mixed with glycerin is claimed by Dr. Hammond to prove more effective as a local application than the plain tincture. This is due to the retardation of the dissipation of the iodine or, more likely, to the skin remaining soft and hence in a better condition for absorbing the drug.

A NOVEL METHOD OF KEEPING A RECORD.—DR. ABIEL BOWEN, of Medina, sends us an old rubber plate to show his method of prosthetic book-keeping. On the back is the doctor's monogram, with the date of its manufacture. These figures are made in the plaster before the rubber is pressed into position. Sometimes this saves him trouble, and is always a means of identifying his plates.—*Items.*

TOOL SHARPENING.—MR. MILNES, of Huddersfield, forwards us the following item of information: "Carpenters and other tool users who keep up with the times now use a mixture of glycerine instead of oil for sharpening their edged tools. Oil, as is well known, thickens and smears the stone. The glycerine may be mixed with spirits in greater or less proportion, according as the tools to be sharpened are fine or coarse. For the average blade, two parts of glycerine to one of spirits will suffice."—*Jour. Brit. Dent. Asso.*

SECURING BITES.—Have at hand some half-inch brads, and when the wax models for an upper and lower bite are adjusted in the mouth, take a brad with the foil-pliers, hold it an instant in the lamp-flame, and place it across the two models on one side. The warm brad will melt its way into the wax, and the touch of a cold wet pledget of cotton will firmly unite the models on that side. Repeating the process on the other side and also placing a brad on the median line will so secure the bite that the models may be removed without risk of separation or displacement.—DR. PAYSON, *Cosmos.*

ABSORPTION OF THE FANGS OF PERMANENT TEETH.—The patient, aged over forty, whose lower wisdom tooth was shown, came to Mr. Stocken complain of the tooth being loose. Suspecting Riggs' disease the tooth was extracted, when it was found that the fangs were wholly absorbed. This case showed that such absorption takes place irrespective of pressure, as none here existed. Other similar cases were shown, as well as a deciduous tooth of a horse, which had caused the animal to go off its feed. It finally fell out. The horse's age was three years, and the tooth was much worn down.—J. STOCKEN, *Jour. Brit. Dent. Asso.*

ROOT TREATMENT AND FILLING.—I notice much is being said of late on root filling. I have had an experience of three years, and have lost only one tooth that I know of. I extracted the tooth after vain attempts to quiet the pain, and sought earnestly for the cause of the trouble. The posterior root (of right inferior first molar) was filled properly, but the anterior was not, it being too small for a jeweler's broach to go to the foramen. The tooth is prepared as usual, enlarging where I can, washed out with hydrogen peroxide, and dressed with a mixture of iodoform, oil cloves and eucalyptol till all odors of decomposition have subsided; then I dry out with hot air (using the rubber-dam, of course), and pump into the roots gutta-percha dissolved in chloroform, to which *iodoform* has been added; then put a cone of gutta-percha in and the root is sealed. If any one has ever used iodoform in the chlora-percha I have not seen it. The idea is original with me. If there should be left in the tubuli any of the products of decomposition I think the iodoform would neutralize it.—R. Y. Jones, *Items.*

How to Clean a Mixing-Slab.—One of two methods may be pursued to clean a mixing-slab for cements.

Peroxide of hydrogen, a few drops, allowed to remain on the slab will in a short time render cleaning the surplus cement off easy.

Another way is to use strong aqua ammonia which will also readily break up the mass of cement.

From these two practical points we might draw lessons. Peroxide of oxygen should not be used more than necessary in the mouth near oxyphosphate fillings. We infer that it is not the sulphuric acid in the peroxide that does the damage but the chemical affinity of the oxygen for the phosphoric acid. Then again the air we breathe may contain ammonia, which as we have shown is a solvent of the oxyphosphate, but according to Grouven, for every 100 lbs. body weight, an adult man expires in the twenty-four hours about 3.9 grains, and a boy about 6.2 grains ammonia. According to Lossen, however, the average in twenty-four hours for an adult is 0.014 grain (0.22 grain). From this we see that young individuals produce more ammonia than old and small proportionately more than large animals. This may be suggestive of other ideas.—Dr. W. H. Whitslar in *Dent. Reg.*

Societies.

"Wherewith one may edify another."

MICHIGAN DENTAL ASSOCIATION.

The thirty-sixth annual meeting of this society will be held at Sault Ste. Marie, August 18, 19 and 20, 1891. Every one is familiar with the advantages this beautiful place offers. A more delightful place could not have been chosen, and it is hoped that all who can arrange to do so will attend the meeting. Further particulars will be furnished upon application to the Secretary,

Dr. J. Ward House,
Grand Rapids, Mich.

AMERICAN DENTAL ASSOCIATION.

The thirty-first annual meeting will be held at Saratoga Springs, N. Y., commencing Tuesday, August 4, 1891, at 10 o'clock A. M.

President, A. W. Harlan, 70 Dearborn Street, Chicago; Secretary, George H. Cushing, 96 State Street, Chicago.

Sections.—I. Prosthetic Dentistry and Metallurgy. Chairman, T. S. Waters, Baltimore, Md.; Secretary, W. B. Ames, 70 State Street, Chicago.

II. Dental Education, Literature and Nomenclature. Chairman, C. R. E. Koch, 3011 Indiana Avenue, Chicago; Secretary, Louis Ottofy, 70 Dearborn Street, Chicago.

III. Operative Dentistry. Chairman, A. E. Baldwin, 828 West Adams Street, Chicago; Secretary, N. S. Hoff, Ann Arbor, Mich.

IV. Histology and Microscopy. Chairman, W. X. Sudduth, Minneapolis, Minn.; Secretary, I. P. Wilson, Burlington, Iowa.

V. Materia Medica and Therapeutics. Chairman, A. W. Harlan; Secretary, James Truman, 3243 Chestnut Street, Philadelphia.

VI. Physiology and Etiology. Chairman, H. A. Smith, 128 Garfield Place, Cincinnati; Secretary, W. S. How, 12th and Chestnut Street, Philadelphia.

VII. Anatomy, Pathology and Surgery. Chairman, T. W. Brophy, 96 State Street, Chicago; Secretary, M. L. Rhein, 104 East 58th Street, New York.

ILLINOIS STATE DENTAL SOCIETY.

At the twenty-seventh annual meeting of the Illinois State Dental Society held at Bloomington, May 12-15, 1891, the following officers were elected for the ensuing year: President, W. H. Taggart, Freeport; Vice-President, Garrett Newkirk, Chicago; Secretary, Louis Ottofy, Chicago; Treasurer, W. A. Stevens, Chicago; Librarian, F. H. McIntosh, Bloomington. The next annual meeting will be held in Springfield, beginning on the second Tuesday in May, 1892.

Louis Ottofy, *Sec'y.*

MISSOURI STATE DENTAL ASSOCIATION.

Annual meeting Louisiana, Mo., July 7, 8, 9, 10, 1891.

Papers.—1. Dr. J. F. McWilliams, Mexico—"President's Address to State Association." Discussion opened by Dr. J. B. Newby, St. Louis.

2. Dr. J. D. Patterson, Kansas City—"Medication in the Treatment of Pulp Canals." Discussion opened by Dr. Theo. Stanley, Kansas City.

3. Dr. B. Q. Stevens, Hannibal—"The Preparation of the Mouth, and Plate Work." Discussion opened by Dr. W. N. Morrison, St. Louis.

4. Dr. Frank Slater, Rich Hill—"The Devitalization and Removal of Tooth Pulps." Discussion opened by Dr. J. E. Crozier, Lee's Summit.

5. Dr. D. J. McMillen, Kansas City—"Crown and Bridge-Work—Use and Abuse of Same." Discussion opened by Dr. T. M. Nicholson, Fayette.

6. Dr. A. H. Fuller, St. Louis—"Preparation of Cavities." Discussion opened by Dr. H. S. Lowry, Kansas City.

7. Dr. Wm. H. Eames, St. Louis—"Review of Dr. Miller's Work, with Personal Observations." Discussion opened by Dr.

8. Dr. Geo. L. Shepard, Sedalia—"Dental Fees." Discussion opened by Dr. L. A. Young, Neosho.

9. Dr. J. M. Austin, St. Joseph—"Report on New Appliances." Dr. A. J. Prosser, St. Louis—"Report on Clinics."

10. Dr. I. D. Pearce, Kansas City—"General Anæsthetics in Relation to Oral Surgery." Discussion opened by Dr. L. E. Day, Nevada.

11. Dr. E. E. Shattuck, Kansas City—"Regulating Appliances." Discussion opened by Dr. W. L. Reed, Mexico.

CLINICS.—1. DR. J. D. PATTERSON, Kansas City—"Pulp Canal Filling."

2. DR. J. STEPHEN COYLE, St. Louis—"Open-faced Crowns."

3. DR. J. F. HASSELL, Lexington—"Soft Gold Filling."

4. DR. E. E. SHATTUCK, Kansas City, will exhibit "Regulating Appliances."

5. DR. N. W. PENCE, St. Louis—"Gold Filling. Operator doing his own Malleting."

6. DR. R. R. VAUGHAN, Fulton—"Copper Amalgam. Will also exhibit Bridge-Work."

7. DR. D. J. MCMILLEN, Kansas City—"Soft Gold Filling."

8. DR. B. Q. STEVENS, Hannibal—"Amalgam Filling to demonstrate packing and finishing. Will exhibit dies for striking up Face Teeth for Plate Work—Combination Fillings—Pulp Canal Impressions."

9. DR. J. T. FRY, Moberly—"Compound Gold Filling."

10. DR. J. B. VERNON, St. Louis—"Bicuspid Crown, Porcelain Face."

11. DR. T. B. CARR, Stanberry—"Extracting."

12. DR. E. B. CRANE, California—"The Crane Vulcanizer, and a new method of moulding Rubber Plates. Will also show plates made the old way."

13. DR. W. H. BUCKLEY, Liberty—"Small Bridge Richmond Crown Attachments."

14. DR. GEO. A. MCMILLIEN, Alton, Ill., "Will show the best Foot Blow Pipe for country dentists—those who have no Gas."

15. DR. W. M. CARTER, Sedalia—"Gold Filling, using Williams' Crystalloid Gold, No. 3."

16. DR. WM. N. MORRISON, St. Louis—"Lining Cavities with Gold and Platinum Foils, for Amalgam Fillings."

17. DR. WM. H. EAMES, St. Louis—"New Form of Bridge-Work. Teeth placed in position after Bridge is completed."

18. DR. A. J. MCDONALD, Kansas City—"Open Faced Bicuspids for Bridge-Work."

19. DR. A. C. GRIGGS, Warrensburg—"Cleft Palate Appliances."

The usual railroad rates will be given; a fare and a third on the certificate plan. Be sure to get your receipt at starting point.

Hotel rates, $1.00 and $1.50 a day. A cordial invitation is extended to all reputable dentists; come, and take part.

Dental depots will be represented. Electrical motors and appliances will be exhibited. Those having new appliances should send them to Dr. J. M. Austin, St. Joseph, Mo.

Wm. Conrad,
Henry Fisher, } Ex. Com.
J. W. Whipple,

ST. LOUIS DENTAL SOCIETY.

We, your committee, appointed to present resolutions of respect to the memory of the late Dr. Wm. H. Atkinson, New York City, beg leave to offer the following:

Whereas, The members of the St. Louis Dental Society have learned with deep regret of the sad death of one who has been so closely identified with every advance made by the dental profession during the past twenty-five years: whose honorable career as a professional man has won for him a world-wide reputation, and whose personal qualities secured for him the love of every reading dentist in the world.

Resolved, That the St. Louis Dental Society recognizes the obligation dentists of America owe to the late Dr. Wm. H. Atkinson for the zeal and energy with which he has advocated the many changes which have been for the elevation of his chosen profession.

Resolved, That as a mark of appreciation of the worth of the late Dr. Wm. H. Atkinson, as a man and dentist, these resolutions be spread upon the records of this Society, a copy be sent to the family, and to the dental journals for publication.

Wm. Conrad,
Wm. H. Eames, } Committee.
J. B. Newby,

RESOLUTIONS ON THE DEATH OF DR. F. C. RUNYAN.

At a meeting of the dentists of the city of Springfield, Ohio, held on June 5, 1891, the following resolutions on the death of Dr. F. C. Runyan, were adopted:

Resolved, That by his death, the dental profession has been deprived of one of its very able and useful members. Nevertheless we bow in humble submission to the Divine will, who doeth all things well.

Resolved, That we extend to his family our sincere sympathy in their bereavement.

Resolved, That a copy of these resolutions be sent to the family of the deceased, and to the dental journals and daily papers for publication.

RESOLUTIONS ON THE DEATH OF DRS. W. H. ATKINSON AND JOHN STEPHAN.

At the meeting of the Northern Ohio Dental Society at Oberlin, the following resolutions were adopted:

Your committee appointed to report on the deaths of Drs. Atkinson and Stephan report jointly as follows:

By the irrevocable decree of the Ruler of the Universe the Northern Ohio Dental Association mourns the loss of one of its charter and honorary members. Wm. H. Atkinson, M.D., D.D.S., having departed this life April 2, 1891, in New York city; also John Stephan, D.D.S., an active member who died June 25, 1890, at Cleveland, Ohio. In the decease of the former this society and profession at large have lost one who was ever most keenly alive to the interests of the profession and a pioneer and leader in the science and art of dentistry.

In the death of the latter this society loses one of its most active and conscientious members.

Committee,
C. R. Butler,
J. F. Siddall,
F. S. Whitslar,
Chas. Buffett.
Henry Barnes,
H. F. Harvey.

CHICAGO DENTAL SOCIETY.

At the meeting of the Chicago Dental Society, Tuesday evening, May 5th, 1891, the following resolutions on the death of Dr. William H. Atkinson, of New York, were adopted:

Whereas, The Chicago Dental Society having learned of the death of Dr. William H. Atkinson of New York, one of the most eminent, learned and best known members of the dental profession; therefore be it

Resolved, That in the death of Dr. Atkinson the members of the society feel a sense of personal bereavement in the loss of a much loved and conspicuous member of the profession, and while we bow in humble submission to the divine will, we desire to express our sorrow in his final exit to the unknown land beyond this world of ours. Be it further

Resolved, That the Secretary transmit to the bereaved family of Dr. Atkinson a copy of these resolutions and that a copy be furnished the dental journals for publication.

J. N. Crouse,
A. W. Harlan, } Committee.
W. W. Allport,

RESOLUTIONS ON THE DEATH OF DR. JAMES W. WHITE.

The following resolution by Dr. Allport in regard to the death of Dr. White, was passed at a meeting of the Chicago Dental Society held Tuesday evening, June 2, 1891:

Whereas, It hath pleased the Creator and final disposer of all things to remove from the world Dr. James W. White of Philadelphia; and

Whereas, It is fitting that this society should make some record of its appreciation of his virtues and of his useful life; therefore

Resolved, That in the death of Dr. White dental journalism has lost its ablest editor, the business world a member of sterling integrity, the unfortunate and needy a practical philanthropist, and the church an exemplar of the nobility of a liberal christian religion.

Resolved, That in their affliction we extend to his bereaved family our sincere sympathy, and with reverent humility we commend them to Him who has promised to be "the friend of the widow and the fatherless," and "a real present help in the time of trouble."

Resolved, That a copy of these resolutions be transmitted to the family of the deceased, and sent to the *Dental Cosmos*, the *Dental Review*, and other dental journals for publication.

Our Aftermath.

Dr. W. Storer How, of Philadelphia, has our thanks for timely favors.

Rubber Trees were discovered by the Stanley Expedition in the great Aruwimi forest.

Mark Twain says there is something very fascinating about science; it gives you such wholesale returns of conjecture for such trifling investments of fact.

Comparative Dental Anatomy, an address before the First District Dental Society of New York, by Dr. W. C. Barrett, Buffalo, reprinted from the *Dental Cosmos.*

Married.—Dr. Sherman M. Fowler, of Hastings, Mich., and Elsie S. Rich, at Hammond, Wis., Tuesday, May 19, 1891. The Journal wishes them many years of happiness and prosperity.

"The presence of one-twentieth of one per cent. of lead or certain other metals in standard gold will render a bar an inch thick so brittle that it may readily be broken by a slight rap with a hammer."

An artificial rubber has been invented, which is being carefully tested by the electricians. It is made in five varieties, three soft and elastic, like soft rubber, and two hard and elastic, like wood and ivory. It burns with difficulty, and is black, brown or dark blue in color.

What is claimed to be a mastodon's tooth has been picked up at the Sea Tack Life-Saving Station, Virginia. It is shiny jet black in color, measures three inches in width, five inches in length and two and a half inches in height. The tooth weighs two pounds and nine ounces.

Practical Suggestion.—Sharpson: If your tooth aches why don't you go to a dentist and have it yanked out?

Phlatz: I don't like to lose it. It's an eye-tooth.

Sharpson: Then why don't you go to an oculist? Maybe he can save it. —*Chicago Tribune.*

Enforcing the Dental Law.—Next we shall hear of a detective getting killed in order to convict somebody of murder. One of these gentry has just had a tooth filled by a dentist who practiced without a license in order that he might testify against him. We would like to fill a detective's tooth who was trying to convict us of something, if we knew it at the time.—*Life.*

DR. J. W. WHITE, president of The S. S. White Dental Manufacturing Co., and editor of the *Dental Cosmos,* died Wednesday, May 27, 1891.

Dr. E. C. Kirk, of Philadelphia, is the new editor of *The Dental Cosmos.* Henry M. Lewis becomes President of the S. S. White Dental Manufacturing Company, and Wm. H. Gilbert, General Manager.

"A FREAK OF NATURE" SURELY!—The *Columbus* (*O.*) *Dispatch* prints an interview with a convict in the penitentiary, who begins his story with "in 1882 *I was salivated in my right arm,*" followed by a hole in the roof of his mouth which he stuffed with cotton until "now the cavity is limited by the outside walls of the face and the bone on which the brain rests." The *Dispatch* thinks it "a case that will prove interesting to the medical fraternity" and we are of the same opinion. Next!

DR. J. G. CAMERON, of Cincinnati, recently lost a finger from blood-poisoning, caused by the scratch of an instrument; necrosis ensuing necessitated amputation. It is remarkable that there are so few cases of the kind. Dr. E. E. Hughes, of Des Moines, Iowa, nearly lost his sight by a piece of tartar striking the eye while he was scaling a patient's teeth. If you have a scratch or cut on a finger that you must put into a patient's mouth, better cover it with a thin rubber finger tip, or cot, than run any risk.

COPPER AMALGAM still continues to divide the profession. Opinions are many—facts few. Dr. Ames argues that we heat and triturate it too much. Dr. Barnes contends that we do not heat and grind it enough. The *Items of Interest* says: "The OHIO JOURNAL asks, 'Why does copper amalgam squeak?' We know!—in its squeaking voice it is crying, 'Take me out! take me out! I am a failure! I ought to turn black, but I can't in this mouth; take me out!' Brethren, take heed to the voice of the copper amalgam."

DOUBLE BOW MOLAR CLAMP.—We had long desired a rubber-dam clamp with double bows for short and irregularly shaped molars, especially in filling crown cavities in the teeth of children, being satisfied that it would stay on any molar. In corresponding with Mr. J. W. Ivory we learned that he would make any pattern of clamp and immediately ordered one. It has now been in use about two months and more than meets our expectations in every way. We couldn't do without it. We find Ivory's clamps much more satisfactory when used with Ivory's clamp-forceps.—W. H. S.

"THE TRUTH IS," says the editor of the *British Journal of Dental Science,* "we are all too anxious to discover some new thing; we notice some peculiar coincidences, we assume they are consequences; we build up an airy theory to connect them and satisfy our desire for continuity; and we continue our observations in order to *support*, rather than to *verify* our original idea. . . . If men spent but a portion of the time they spend on making theories in observing and recording occurrences, we should get along a little more quickly towards the real truth of the various questions."

DURING THE HOT WEATHER frequently empty your dental spittoons, and use an *odorless* disinfectant (Platt's Chlorides, Condy's Fluid, etc.), otherwise you will not know whether the odor comes from the disinfecting agent or from foulness. Nasty cuspadors and musty offices do not tend to elevate the individual or the profession. Often patients coming to us have remarked that they had "changed their dentist" for no other reason. They liked the man and his work, but could not endure the surroundings. Don't have your rooms looking like a lawyer's office or a surgery. A few cut flowers, cheerful pictures, and entertaining reading matter, will go a great way in helping you to the better class of patronage. Try it.—W. H. S.

ERRORS AS ACCEPTED TRUTHS.—"Given a man of acknowledged position, worth and opportunities for forming an opinion; given that he lays down the law in certain terms; it will follow that most of us, having less data on which to form our opinion, will accept, and endorse his, and in future observe all such points through his pair of spectacles. Now, this will not only prevent our detecting errors, if errors there be, but will actually elevate such into the position of accepted truths; they creep into text-books; they are copied from one to another; they are taught in the schools; red-tapish examiners expect them dished up by the would-be successful candidate; time gives them its impress, until the idols become so planted in their niches, that, even though they be proved false, the labor of dethroning them is hardly second to that spent in rearing of them up."—ED. *Brit. Jour. Dent. Sci.*

DR. GEORGE L. PAINE, Xenia, Ohio, after practicing his profession forty-four years, since 1847, in Dayton, and May 1, 1850, in Xenia, retired May 7, 1891. He received the degree of D.D.S. from the Ohio College of Dental Surgery in 1852. Of his students, there are still in the profession Drs. J. A. Stipp, Toledo; E. C. Hamilton, Washington C. H.; C. E. Case, San Francisco; Eber Reynolds, Xenia. Miss Margaret Humphreys, another student, after graduation from the Dental Department of the University of Michigan, became the wife of Dr. Paine's son, Elmer E. Paine, now editor of an Akron, Ohio, daily paper. Dr. Paine was one of the organizers of the old Mad River Valley Dental Society, that for years enjoyed a national reputation for good works, though only a local society. The *Xenia Gazette* very truly says: "The many friends of Dr. Paine will be sorry to hear of his retirement. Stretching into far back years he has been their dentist—and people seem to become almost as much attached to their dentist as to their family physician."—W. H. S.

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Contributions.

"A word fitly spoken is like apples of gold."—Solomon.

PRESIDENT'S ADDRESS.*

BY G. W. HOFFMAN, D.D.S., WHITE RIVER JUNCTION, VT.

The individual who began life in this century has much to be thankful for. The wisdom and experiences culled from many generations await his coming and tutorship, and many times blessed is he if he willingly accepts their guidance.

Never had the human mind such incentives to success as now. Intelligence, culture, and refinement are now every day facts in common paths of life. Energy and ambition have substantial foundations on which to build. The intellect has simply to appropriate what it hungers for from a thousand sources, mould it over and over, stamping it with its own individuality, and behold a product differing from any cotemporaries.

The more ingenuity, the more thought and concentration used in the assimilating process, the greater the results we see. In no one of the many paths of life have the opportunities been more varied than in that one, pursued by the members of our profession. And in no one of them have those selfsame opportunities been more quickly and firmly grasped and moulded by vigorous thought and generous ambition into substantial facts and realities, which are destined to prove a blessing to both the present and coming generations, than in that profession which we as a body represent here to-day. It needs no lenghthy arguments or long winded statements of facts to prove the truth of my assertion. The living fact is before us continually, and "like the sun none but the blind can fail to see it." With us it has been one continuous march, from the clumsy, carved, ivory tooth to the poem in porcelain of to-day; from the disgusting pivot tooth to the Logan crown; from the crude attempts at filling to polished gold contours; from the ignorant, itinerant quack to the educated, polished gentleman of 1891.

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* Read before the Vermont State Dental Society, held at Rutland, March, 1891.

Now arises the question, to what is this progress due. We reply, the right is granted every American citizen to contol the products of his brain. And every other citizen cheerfully pays the premium, which adds to his comfort or prolongs his life. This condition of the people unquestioned wherever the stars and stripes float, is the stimulus that constantly calls them higher. In plain words, the privilege to protect by patents the results of inventive genius. Whether this inventive product is for the kitchen, field, mills, railroads, office, or laboratory, or whether we ever use it or not, it honestly should add to the income of him who originated it.

Take away from our profession the stimulus of invention (and when you deny members of our profession the right to patent, you do take away all stimulus), and the march of dental progress will stop very much after the manner of "Grandfather's Clock." It is childish to reply, consider the honor and glory of advancing your chosen profession. I for one honor and love my profession, but I do not see that I in any way degrade it, when after months of patient study on some intricate point, I make a discovery that will be of the utmost importance to every member if I insist that each one using my discovery should compensate me for the time spent in making it. And it looks to me as though any profession that pursues any different course is holding the labor of its member's hands at a premium and that of their brains at a discount. I for one have no words too strong to express my disapprobation of the assine policy which would dictate such a course.

An eminent writer on the Socialist question once said, "that the surest way to kill the movement would be to make all the leaders capitalists." And the same solution applies equally well to the question of patents in dentistry. If ever the infinitesimal brains of the howlers against patents can be brought to the point of generating an original idea, the cry will surely cease. Gentlemen, you are surely making the greatest mistake of your lives when you join in the cry against the inventor. Let me ask, how *could* you perform your daily task without the aid of many patented ideas? You cannot do without them and compete with brethren who use them. Be consistent then, gentlemen, and encourage the inventive genius of our members, for on it, whether you believe it or not, depends the advance of dentistry. But for the sake of common sense and decency do not stand as you now do, saying in effect if not in words, I am willing my dear sir you should spend as much time and money as you choose, invent any and everything you can, and when your cunning hand and brain have worked a solution to the problem, I like the high-toned professional spunge and dead-beat that I am, propose to beat you out of a just remuneration. Gentlemen, once more, for the sake of your profession, for your own good name, be consistent, be honorable. "The laborer is worthy of his hire." To be professional from your standpoint, is to stand still. Holmes has said, "Life is a great bundle made up of little bundles. The life of a dentist is one great trial made up of little trials. Many of these trials are of our own making, and others are the result of years of stupidity and blunder. Among the last, no one is a greater curse to dentistry than the credit system now in vogue. What reason is there in bills being allowed to run six, twelve, or eighteen months without even a statement. Why should we be obliged to twist and turn every way to meet our bills with all this due us. Why, simply this, it is not considered professional to send in bills. But is it professional to let our own bills run and to be dunned on every corner? Then it is not economy, we cannot buy at so good a rate on time as for cash. Your dealer will not sell your dental supplies on a year's time so close as for cash; I say he will not, he *cannot*. It may be professional to allow your patients unlimited credit, but it is not sound business.

Another one of the many trials that presents its ugly face to our view is the question, "How much shall we charge for our services?" What answer do you suppose an M. D. would make to a patient if, when called to take charge of a case they say, now Doctor I want you to look my case over and tell me about how much you think it would cost to cure me. And by the way, Doctor, unless you can promise me that the cure will be permanent and that I shall be free from similar trouble in the future, I think I will employ another physician or die. Yet, gentlemen, this is the kind of talk the most of us hear nearly every day of our lives. And not only that but our patients would lead one to infer from their talk that the professional skill we call to our aid in their case, was thrown in with the material we use. Something after the manner your grocer throws in wrapping paper with the sugar you purchase from him.

For this condition of things we alone are to blame; when we hold our professional skill and experiences at a proper value, then and not till then will our patients do the same. I repeat it, gentlemen, we are to blame for this state of affairs, we and we alone have made a wrapping paper of our professional skill, and we have used it for this purpose so long that our patients cannot be blamed for putting it to the same use.

Another one of our trials comes from the ignorance of our patients. They know little and care less about the care of their teeth or the work we insert. Are we not to blame for this, do we give proper warning, have we not devoted far too much space to the remedy and too little to the cause? Are we not like the doctor, of whom Will Carleton writes,

> "Who a drowsy half vigil kept
> Still studying, as he partly slept,
> How men might glutton, and tope, and fly
> In the face of death, and still not die."

I fancy I have been a very credulous mortal. My childhood was brightened with the touching account of G. Washington, the cherry tree, the hatchet, and the pater. John Smith was to me a hero in history. Pocahontas, a noble woman saving her first love from certain death. In the credulity of my honest heart I swallowed these and other similar historic illusions, and in each case that intellectual emetic, known as recent investigation, has unwillingly compelled me to throw them up. There is a grave doubt as to the existence of a cherry tree and hatchet at present.

Time may prove there never was a G. Washington, or pater; while Pocahontas was simply a red squaw bargaining for more finery. And I am compelled to acknowledge that "things are not what they seem."

When I least expected it, my too trusting and confiding disposition was imposed on in later years. In my early practice I was surprised to meet such a cordial reception from men controlling the manufacture and sale of dental goods. Did I wish for a certain kind of an instrument, it was ready in no time just to my order. Did I want $300 worth of goods on time, the goods were sent at once. Had I some crude, imperfect idea that I imagined would be useful to the profession? Skilled workmen were at hand to quickly develop and polish my imperfect ideas, while I was given the credit and a share of the proceeds. And thus events glided on while the relations between these men and myself continuing as pleasant as hitherto, and might still have been so had I not in an unlucky moment been tempted to stray beyond the snow-bound, when presto, change in a moment. Once more I realize, "things are not what they seem." These men were not the good fellows, whole souled, generous creatures we pictured them. They were "monopolists," which expresses many bad qualities and very few good ones. But what had they done? They had formed (would you believe it), they had formed a combination, pledging themselves to sell all goods at fixed prices. In this way the combination indirectly manages the income of every practicing dentist. They have raised the price on many articles and are going to on others. And they intend to extort every dollar from the dental profession that they by any means can, short of actually using the thumb-screw and rack. Well my friend with the big mouth and 200 horse-power jaw, what the combination is going to do you know just as much about as I do, and that is nothing.

Let us see how much truth there is in the first charge. By a careful comparison of old and new price lists, I find that many articles have been marked up while many others, and by far the greater portion, have been marked down. But what sense in talking of prices. It is not what we pay but what we get for what we pay. The combination charge us from $1 to $4 per ounce for amalgam. We take the amalgam and charge our patients from $50 to $100 per ounce. An anecdote clipped from a paper expresses the whole in a nutshell. The motor running an elevator in one of our city hotels got out of order. Man after man tried his hand in repairing it, but no go. At last one came, looked it over, worked about fifteen minutes, and it was all right. Being asked his price he replied, $10. The proprietor ventured the remark that it was pretty steep. The man calmly made his bill as follows: To fixing motor, 25 cents; to knowing how, $9.75. The proprietor saw the point and paid the bill. It is the knowing that costs every time. We pay the manufacturer for knowing how to produce a good article and the public pay us for knowing how to use it.

I cannot better close this article than quoting the words of Josiah Wedgwood:

"All works of taste must bear a price in proportion to the skill, taste, time, expense and risk attending their invention and manufacture. Those things called dear, are, when justly estimated, the cheapest. They are attended with much less profit to the artist than those which everybody calls cheap. Beautiful forms and compositions are not made by chance, nor can they ever in any material be made at small expense. A competition for cheapness and not for excellence of workmanship is the most frequent and certain cause of the rapid decay and entire destruction of arts and manufactures."

In conclusion, gentlemen, let me once again, as my term of office draws near its course, as at its commencement, thank you for the honor you conferred upon me. For your courteous attention, for your hearty good will, for your prompt assistance at all times, let me for once and all, thank you, and believe me, gentlemen, the days we have passed together will never be forgotten but will remain a source of pleasure to me. And when in the years to come memory walks down the aisle of departed years to view the forms, faces and events that have contributed so richly to my happy hours, ever chief among them will remain the fact that I was once the president of the Vermont State Dental Society.

PLASTIC BASES AND PINLESS TEETH.*

BY W. S. CURTIS, WEST RANDOLPH, VT.

In presenting this subject before this society at this time, I do not expect to say anything new or novel, but will try and explain in a very brief manner the merits of the tooth I am now using in my business almost wholly. After you have heard of its merits, I shall expect you to point out its demerits. As its demerits are what I am after, in order, that they may be overcome by some change in the construction of the tooth.

In presenting this tooth to you, I shall not claim it to be the *ideal tooth*, or anything near what we hope may be produced in the near future, by some one in or out of our profession. No matter from whom it may come, only that we get the right thing. But I do think this tooth possesses many qualities ueedful to prosthetic dentistry, not to be found in any other tooth of which I have any acquaintance.

It is well known by most of us that some cheap and inexpensive material must be used in the construction of a very large proportion of artificial dentures. It is the demand of the age in which we live that the large majority of patients for whom we are called upon to serve in that capacity, be furnished with artificial dentures in harmony with their resources for paying for same. It then becomes the duty of the dentist to provide for them a denture possessing as many good qualities as possible consistent with the price paid for the same; and the better the denture produced at any given price with the least trouble and expense to the dentist, the more satisfactory it will be to both dentist and patient.

A plastic base seems to be the only material upon which teeth can be mounted that comes within reach of a large majority of humanity who have been so unfortunate as to lose their natural organs. Without this many must do without teeth or the dentist must be subjected to the inconvenience of collecting large bills from poor patients; lose the entire bill many times or positively refuse to do their work upon any terms whatever other than cash. Either of which in many cases is extremely unpleasant.

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* Read before the Vermont State Dental Society, held at Rutland, March, 1891.

Now, then, as a plastic base seems to be a necessary factor in our profession, the next essential is a tooth so constructed that it shall possess the entire strength of material used, adaptable to all cases with very little or no grinding; and possessing the required amount of anatomy.

It is well known that a gum tooth cannot be made to harmonize with the features of the average patient as readily as a plain one, and when done is attended with more or less labor and vexation not encountered when plain teeth are used. Therefore I have confined myself to the construction of a plain tooth, as the quickest and best way out of our present difficulties attending the construction of a denture upon a plastic base I herewith present you with a tooth that can be made in such a variety of lengths and sizes, as to be adaptable to all full cases without any grinding whatever, *a condition to be appreciated.* For grinding teeth is attended with no little inconvenience, as we all know. When teeth are properly adjusted in. the average mouth, at the present time, and are usually weak and unsatisfactory at that.

This tooth when mounted rests upon a solid base, and is so constructed that the material has been made to flow around it in the process of moulding, always wedging itself into a smaller space, thereby filling every point, and when done, each tooth while separate from the other cannot become displaced without displacing the tooth upon either side of it. Therefore each tooth is virtually sustained by the entire strength of material required to hold three teeth in position, which makes, as you will see, a very strong attachment.

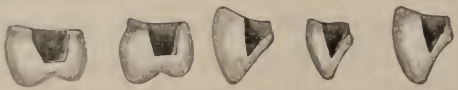

FIG. 1—shows construction of retaining cavities in the pinless teeth.

The tooth also has the form of a natural organ upon its palatal surface, which admits of the natural incline towards the hard palate, so essential in maintaining the proper tone of voice. The absence of pins is also a great feature in point of strength. Who of us who have used plain teeth have not suffered grief and annoyance time and again by having a tooth break where the pins were inserted, most surely its weakest point. This tooth can be used with any and all plastic bases. Also with all plastic attachments upon a metalic plate with equal satisfaction, and with all cast metals used for bases. The outside or buccal portion of the tooth can be made thin at the neck to extend well up under the lip, where any great amount of absorption has taken place, and the natural curve of the festoon of the gum will cover the attachment between the teeth, thereby disguising its artificial appearance. Where there is not sufficient absorption of tissue to admit of any extension of porcelain above the ridge. Of course, we cannot use a gum tooth, and must necessarily use a plain tooth with a very short bite. When pins are used, the shorter the bite, the weaker the tooth becomes, whereas with this tooth, the shorter the bite, the stronger the tooth and attachment. As in short bites the point of leverage is brought nearer its base with a consequent increase in thickness of porcelain. As short bites with pin teeth have been attended with many difficulties, such as being required of necessity to make the teeth describe too broad an arch, especially the bicuspids, in order that we might have sufficient porcelain about the pins for strength.

This one difficulty has caused the construction of many a denture, the prominence of which, when inserted in the mouth became so conspicuous that its artificial appearance was easily recognized by all with whom it came in contact. But as such dentures depended upon pins for attachment, and porcelain surrounding them for strength, we could not grind it all away, hence we did the best we could with the material we had to do with.

But as this tooth is not dependent upon pins for its support, it can be set under the ridge or outside and the strength is the same.

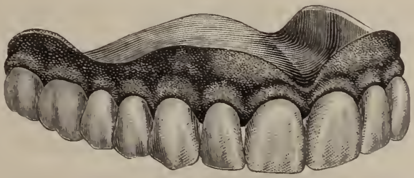

FIG. 2—shows case completed.

Therefore it must be obvious we have gained a good point here. I have used this principle of attachment with difficult short bites upon bicuspids for more than fifteen years, and have never had to my knowledge one tooth so constructed, break or loosen from the plate in all that time. This would surely be considered a favorable record for short bites, and the success so obtained led me to enquire, why not make them all that way? Of course, we cannot abandon pins in all cases as they must be used in many partial cases, but when they can be dispensed with, this method seems much more preferable. Should a tooth be broken by dropping of the plate or any other accident, it can be repaired as easily and quickly as a pin tooth by any method now adopted for such repairing. But I am pleased to say, that in all the time I have used these teeth I have never had a broken tooth from any cause. I wish I could say as much for pin teeth.

THE TREATMENT OF PROXIMAL SURFACES.*

G. F. CHENEY, D.D.S., ST. JOHNSBURY, VT.

In taking up the subject of "The Treatment of Proximal Surfaces," my first thought was, what can I say that has not already been said? Upon further consideration I decided to write my essay, giving you my opinion, derived from my own personal experience and that of others, as they hrve given it in the various periodicals of the day, as to what is best as a rule for general practice.

In this paper I shall only consider operations upon the proximal surfaces of the posterior teeth. The same general principles as to separation and contour, should be followed upon the anterior teeth. Operations upon the primal surfaces are the most numerous, the most difficult, the most laborious and at times, the most discouraging of any we are called upon to perform.

About 1871, Dr. Arthur, of Baltimore, came forward with a rule for practice, which was to permanently separate with a file where superficial decay had made its appearance, and in anticipation of decay. His idea was to have spaces between the teeth which would be self-cleansing, or could be easily cleansed. His theory, perhaps, was good, but put in practice it was bad in many ways. Irritation of the gums and change in the position of the teeth, which could not otherwise occur, followed this practice. The method had many converts for awhile, but they soon saw the bad effects of such treatment, and many of them are now our strongest exponents of contour work. I am inclined to think the dental profession would be better off to-day if Dr. Arthur's book had never been published, for to this day we see the evil effects of his teachings followed, not only by novices, but by good operators who to gain room for the introduction of their fillings use the file indiscriminately. This mode of practice I wish to condemn in the strongest terms. Dr. S. G. Perry says,* You may reason with all the plausibility at your command and you cannot overcome the wide spread, instructive dislike of that practice. You may flatter yourself that you have made a good argument, and as the patient does not get up and leave at once you go on cutting and filing. But a year goes by and your patient does not appear, he has quietly slipped away to some one of those men who try to leave the teeth as nature made them.

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*Read before the Vermont State Dental Society, held at Rutland, March, 1891.

The public calls this filing "taking off the enamel." It is more than that. It is taking off from the operator the armor of courage and confidence in his own ability to make his work a real blessing to his patient and leaves him bare and unprotected against the temptation of doing hasty, botchy and inartistic work.

During my pupilage I was taught to avoid the use of the file for making separations under all circumstances. Consequently, during the eight or ten years I have been in practice I have been upon the watch for the good or bad effects of such work. Many times I have been horrified to see teeth which had been slabbed as a sawyer in a saw mill slabs his logs. In most of these cases if the filling was found at all it was perfectly flat, and the filed surface about it would be completely honey-combed. The repair of this evil is as perplexing as anything we have to do.

Teeth which are separated in this way preparatory to filling, unless prevented by the opposing tooth will move forward closing up the space made, allowing the arch to become contracted, and if there are a number of such spaces treated in this way the jaw may contract to such an extent that the countenance will be changed to a great degree, and in cases result in disfigurement. It also leaves a place for food to be crowded against and under the gum margin, producing an inflammation of it, and finally the whole tooth socket, making mastication very difficult and painful.

We want approximate contact that will not leak food in between to the extent of breaking down the interproximate gum tissues, thereby causing a septic condition, which under all circumstances is a predisposing cause for decay. Fillings put in under these conditions are almost sure to fail.

In treating proximal cavities we should do what will be for the best good and comfort of our patients. That I believe to be the perfect restoration of the tooth to its natural contour, for we certainly cannot (except in extreme cases) improve upon nature. In preparing proximal cavities the first thing to do is to separate the teeth. This can be done either by rapid or slow wedging. For rapid separation we have the various separators which work very nicely and are almost indispensable in an office. I much prefer the Perry two-bar separators, as they take up less room than any others I have seen.

In filling proximal cavities I use the rubber-dam in nearly all cases. Filling, whether with gold, amalgam, or the cements, can be done very much better, thereby escaping the danger of getting the cavity moistened from a weeping or slightly bleeding gum. When using amalgam, after adjusting the dam, I then separate with the separators giving it a few turns which will give me the space desired with very little discomfort to the patient. In this way I had room to put a thin piece of metal between the teeth for a matrix (which is a very good adjunct in amalgam filling) and have plenty of room to contour and finish. These fillings should be as nicely finished at the cervical margin as gold. One great cause of so many amalgam fillings failing at this point is a mass of amalgam being left to extend over the edge of the cavity, thereby forming a shelf for the lodgment of food and keeping the gum continually irritated.

Any one who has never used a separator will be surprised at the amount of space that can be made and the little discomfort caused the patient. But while I appreciate the usefulness of the separator, I still prefer, when convenient, to wedge slowly, using either orange wood or cotton. Rubber I do not like on account of the great soreness following its use. Wedging should be commenced several days before the operation of filling. When the desired amount of space is obtained it is a good practice to remove the wedge and fill the space with gutta-percha, which holds the separation made, although in using wood I often leave it until I file. Wood after it has expanded to its full extent will hold the teeth apart and allow the soreness to wear away.

In excavating these cavities we must have in mind the shape of both, the interproximate space and tooth. Form the cavity in such a manner that when it is filled the edges or enamel margin, which is an acknowledged weak point, shall not come in contact with the adjoining tooth. Extend the cavity to take in the whole area of corroded and blackened enamel. When extensive caries is found under the enamel at the marginal ridge with large undercuts, cut it away. If it was left the undercut would be very difficult to fill with gold and the enamel would be liable to break. Bevel the enamel margins slightly outward, so that the gold will hang over and cover the short enamel rods, and smooth the cavity edges with sand-paper discs or strips. Small cavities can oftentimes be prepared very easily and nicely by going in from the buccal surface, thereby saving the crown of the tooth intact.

In filling proximal cavities the matrix is oftentimes of great service, but must be used with care. It serves as a guide in packing the gold and prevents the plugger from slipping over the cervical edge. A matrix should be adjusted so that it shall not obstruct the light and give free access to the cavity (sometimes a very narrow strip of this metal tied about the tooth will greatly assist one at the cervical edge, it also shortens the operation of finishing); it should be firm and yet flexible enough to allow the gold to be crowded a little beyond the margin. For this purpose the bands or half bands are preferable. I prefer the Guilford matrix or one similar to those used by Dr. Clapp at one of our clinics two or three years ago, which was adjusted by winding floss silk about it and the tooth. When the matrix is used great care should be taken to pack the gold solidly against it and the edges of cavity.

In filling large proximal cavities with amalgam I use a matrix in nearly all cases, it keeps the amalgam from being crowded up under the gum and leaves the filling in such shape that it can be finished by only drawing a piece of floss silk or moisted rubber-dam between the teeth. Many times I have seen the interproximate tissues in a badly inflamed and diseased condition, caused by nothing else except a mass of amalgam being left.

Regarding materials for filling proximal cavities, I should say, gold when possible. Some cases upon the distal surfaces of the molars, where the cavity extends high up to and under the gum, it becomes almost an impossibility to make a perfect filling with gold. Then again we have patients who cannot afford to pay for gold. With such cases we should do the best we can with other materials. Amalgam at the cervical wall is considered a good material, but not at the masticating surface, as it lacks edge strength, while gold possesses this quality. It will be noticed after a time when amalgam is used at the masticating surface either by shrinkage or a breaking away that a crevice appears between the amalgam and tooth substance, while with gold it is not so; therefore, when we have an inaccessible cavity, amalgam can be used for the cervical portion completing the filling with gold. I am convinced that amalgam will not shrink when used in this way. It is also said that decay will not occur around the edges of gold and amalgam fillings inserted in combination. I have in the last three years made a good many of these fillings, nearly all of which I have seen at different times since. So far they have all proved good.

The finishing of proximal fillings is very important and can be accomplished very easily with our present appliances. These fillings should be so formed that they shall touch the adjoining tooth at a point where the circumference of the teeth is greatest. The edges should be finished in such a way that nothing can lodge. A piece of floss silk will tell when the cervical margin is perfect. If it is not so finished the silk will catch.

FOR WHAT ARE WE LABORING?*

BY A. J. PARKER, D.D.S., BELLOWS FALLS, VT.

I REALIZE in a measure the obstacles to be surmounted in these days of rapid advancement in dentistry, to write a paper on any subject that has not been discoursed upon and thoroughly discussed by scientific men of the highest ability. Yet I venture to read to you a few thoughts collected for and upon the subject now before you, viz., For What Are We Laboring? Hoping as I read to make some suggestion that shall prove of practical value to us as dentists and as men. I venture to assert that every human mind has its ideal, what that ideal is or may be, I will not declare, but infer that it is in perfect keeping with the intellectual faculties of that being as it may have been educated or neglected. Seldom does man attain the height of standard aimed at, and therefore things never quite come up to his ideal. All the more reason for setting the standard high. In glancing over the past ages what do we behold but a constant evolution of appliances, methods and ideas; from the single pair of tongs that fitted every tooth to the mouth to a multiplication of nicely manufactured forceps with their perfect adaptation to each tooth. The years of toil and study have revealed in dentistry equal to the revelations of Edison in electricity. We behold with pride what our predecessors have accomplished for us. The earliest date that has come to our notice of the practice of dentistry is the year 460 B. C. Heroditus, the Greek historian, at this early period while journeying in Egypt, noticed the fact that the healing art was divided into two branches, medicine and surgery. He states that there were surgeons who treated diseases of the eye, others of the ear, and still others of the teeth. There can be no doubt that the operations upon the teeth referred to by Heroditus, were very rude in their character, yet they most strikingly illustrate that there was a degree of refinement existing among the Egyptians at this early date. And this goes to prove the care which they bestowed upon these beautifying and essential organs. I cannot believe that refinement exists where no care is taken of the teeth. The most ancient and valuable writings relating to the teeth are those of Galen, who flourished in the second century after Christ. He had access to the most splendid and valuable library of his time. This was afterwards destroyed by fire. During the dark ages education was neglected and the arts almost forgotten, but as Dr. Harris remarks, "During this pause in the vitality of learning dentistry fared no worse than any other science."

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* Read before the Vermont State Dental Society, held at Rutland, March, 1891.

Since Heroditus much time has been devoted to this subject, and valuable knowledge in regard to it has been preserved for our use. But it is only within the last two centuries that dentistry has received the attention which its near connection with the general health and enjoyment of humanity demands. Thus we are enabled to see that dentistry is not a science of modern origin, and yet we cannot but see that much labor has been performed to work in our loved art a degree of refinement heretofore unknown. And notwithstanding the present state of refinement it has not reached its limit of perfection. A profession is estimated by the same rational law which leads the mind to see and duly appreciate beauty, viz., those things connected with it. If science and education are demanded in the practice of the dental art, and its workings are connected with human life and human happiness and comfort, then will it stand as a profession of high calling; and that such is the case is a clearly proven fact. To the United States belongs the honor of establishing the first dental college of the world, and from this the institutions of learning in dentistry have, as it were, multiplied until there is no excuse for not thoroughly qualifying men to practice the dental art.

All mechanical callings require a previous course of instruction to make perfect artisans; therefore, can no trade or profession be assumed without some practical knowledge. Are we laboring to help promote this profession of ours which has already attained such eminence? Or are we indifferent and contented to travel in the ruts our forefathers have made? Are we accomplishing anything for ourselves or generations to follow us? In many respects we are laboring nobly. To many of us there is one thing of vital importance which looms up like an insurmountable barrier, and will ultimately cause our overthrow as dentists unless we heed the warning voice. And this in regard to our own safty and length of days. Dentists are, it seems to me, at times the most thoughtless in regard to their own safety laboring alone for the benefit of others and for that which perisheth, regardless of the fact that time is fast passing and the grim monster death will shortly claim all there is of an earthly nature in man.

It requires no labored argument to prove to the reflecting mind that too little attention is given to those things that pertain to the physiological and pathological conditions of the human system. And especially true is this with us dentists. Proper observation and reflection will teach us that we cannot trifle with the laws of our physical being without having to pay the penalty of such an infringement. Too often we labor in ill-ventilated offices inhaling the carbonic acid gas given off by our patients. And this is not all we labor, too many hours and take too little open air exercise. The great good we have and are hoping to accomplish for mankind, or the store of money we may heap up for lawyers to grow fat upon after we have put off this mortal, will not paliate the suffering consequent on a disobedience of physical law. We see the respected and the beloved and highly useful in our ranks cut off day by day, and that in the morning of life and usefulness. We ask, is there no remedy? We think there is. "Know thy self" suggests the remedy. "The wise may suffer, reck the foolish must. Learn, then, early to be wise." What I have said proves that the knowledge and practice of physiology with regard to ourselves as dentists, has claims prior any other. In proportion as we labor with or without healthy bodies shall we enjoy active and well regulated minds. What our labor will ever amount to will depend upon the foundation we build upon. If the foundation be insecure, deficiencies and openings will be seen in every part of the building, thus causing the whole structure ultimately to totter and fall to the ground. Then where shall the foundation be? The answer is health, and health must be upon the physiological principles of our nature, otherwise there is no safeguard against physical suffering.

"What is obtained by labor, will of right be the property of him by whose labor it is gained." It is our right to have and enjoy that which we gain through our labor. At the same time it is our duty and privilege not only to care for it, but to well and properly guard and care for the medium through which the result of our labor comes. Some labor with the muscles exerting the bodily strength to weariness; others the intellectual faculties. No doubt all present at this time can appreciate my experience in office labor both muscular and mental. I have lectured hours to some individuals with the vain hope to inspire in them some pride in the care of their teeth, and after all my extra labor in their behalf I behold that my labor was indeed in vain, and this was to people educated in other matters. At such times the passage of Scripture most fitting the occasion suggests itself to me, viz., "Give not that which is holy unto dogs, neither cast your pearls before swine, lest they trample them under their feet and turn again and rend you." Also, "They love to make clean the outside of the cup and platter, but within are full of filth and disease." Herein do we find another untrod field for labor—to properly educate the people in regard to the teeth and their care. Broad as may seem the assertion yet "ignorance reigns." And in the power of the dentist it is to educate. The very title which we bear is significant of our ability to teach. The more the mind becomes familiar with the care of the organs that so beautify the human face, and do faithful duty in preparing food or life giving substance to the system, the more will the source of that knowledge be consulted. How little do we realize what a day may bring forth, or how the words or acts of to-day will terminate. Surely to drop some seeds to-day, even though the ground may be seemingly without soil, will cost us but a trifle and may yield to us bountifully.

For what are we laboring? We all have a mission to fulfill be it great or small. The little mosses need not envy the hardy oak, the stately pines, or the scant bearing magnolia, for they have their uses in the great universe of God, where not the smallest atom is in vain. If we could but read it every human being carries his life in his face, and the face is expressive of beauty or the reverse as that life has been noble and generous or narrowed and selfish. On our features the chisels of thought and emotion are eternally at work, and it will matter not if we grow old in the harness that life has provided for our shoulders to wear, if it shall have been well worn. Thouge age may change the brown locks to a snowy white and the face of youth to that of wrinkled old age, yet that hair and fnce may not have lost any of its beauty. Beauty is not the monopoly of youth. But youth is the time to work out new schemes, and with our dental profession the first years of our practice is the time of the most rapid advancement. "By the time man has reached forty-five or thereabouts he lies as comfortably in his habits or ways of operating as the silk worm in his cocoon."

If I have made some broad and plain assertions in my attempt in making a paper for this occasion, all I can ask is that it be considered as meant. Thomas Dixon says, "If you try to expect to please everybody in this life you will surely fail." Finally, two little verses very simple in construction, but seeming to me to be very appropriate to repeat to you in ending the subject I have been considering:

"Every hour that flits so slowly has its task to do or bear;
Luminous the crown, and holy, if thou set each gem with care.
Hours are golden links, God's token, reaching heaven but one by one,
Use them, lest the chain be broken, ere thy pilgrimage be done."

RAPID METHOD OF INSERTING AND FINISHING CONTOUR FILLINGS WITHOUT THE AID OF A MATRIX.*

BY J. E. WAITT, D.M.D., BOSTON, MASS.

For years science and skill have been coming to that place where its work may be accomplished with the greatest ease and in the shortest time. The department which we represent has been among the foremost in devising ways and means for the accomplishment of our daily work with the least inconvenience both to ourselves and our patients. It shall be the aim of this paper to present you, in a few words, a few (possibly new) ideas, and thereby assist you in the labors of the day, and the rapid and satisfactory completion of those large or difficult contour fillings with which we have to deal. By the use of Dr. Jack's and other matrices very many of the difficult operations in contour filling have become, under the skillful hand, very simple operations; and operations once requiring hours for their completion are now accomplished in minutes. The impossibility of having the walls of a cavity in full view, and the inconvenience of easily adjusting a matrix, led me to discard all forms of matrices and look about for a method of quickly reaching the same or a better result. After some years of experience with methods, foils, and preparation of cavities, I am pleased to present you a method which you will find to answer the requirements of the case, thereby making operations, formerly long and difficult, so short that they become a pleasure both to the patient and the operator. First, space by a separator or tape, to the width of a No. 3 or 4 separating file. Apply the dam in the usual or the following manner: In the case of a right superior second bicuspid, lay the dam over the face and apply it to the mouth in the positition it is to occupy, then with a pencil mark the centre of each tooth from the right superior lateral to and over the first molar. Punch out a hole for each tooth and then apply the dam, beginning at the lateral and working backwards. Over the

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molar slip a clamp, or, if close to the second molar, pass a ligature up between and leave it. Then with a thin and flat burnisher turn the dam upon itself, around each tooth, and dry with cotton.

The dam applied in this manner obviates the tying of a ligature about each tooth, which is a nerve-trying experience. This method allows greater freedom for working, because the dam is out of the way and also affords better light. It will be found to answer the purpose for large cervical cavities when properly applied.

Next, prepare the cavity as usual, except do not cut any retaining points, but in their place cut a fine groove across the cervical wall and down the buccal and palatal or lingual walls with a fine bur, and make the opening on the crown surface when possible, slightly dovetailing towards the body of the tooth; then, with a sand-paper disk, smooth the mesial or distal surface, as the case may be. The gold to be used becomes the next feature, and must be a soft gold easily moulded under a burnisher. I use the new gold of the Boston Dental Manufacturing Company, ropes No. ½. These may be flattened and made into cylinders with great convenience. In using soft foil, take No. 4 soft, cut in one-half sheets and roll to about the size of three-sixteenths of an inch diameter, and flatten. Each cylinder to be of a length slightly exceeding the depth of the cavity from front to back, and its size in the square to depend upon the width of the cavity and the method of condensation. I prefer the No. ½ ropes to any other, for the ease with which cylinders may be made from it. For the intermediate layers, of which I will explain later, the Boston Dental Manufacturing Company's No. 4 foil is the form used. In preparing the cylinders, take a strip full length of gold, grasp it with a pair of pliers and fold over and over until the size wanted is rolled; then condense easily endways, then sideways, and repeat until it is of the desired square.

Never cut a strip in two lengthways to get a short cylinder, but rather fold it upon itself lengthwise, and proceed to roll as in the usual manner. With many of these cylinders of various sizes rolled during leisure hours, or by an assistant, considerable time may be saved at the moment of greatest strain to yourself and patient. Now place a floor of these squared cylinders across the cavity, allowing the ends to extend slightly over the edge, and with a large round or foot-shaped plugger partially condense this layer; then, with a couple of pieces of No. 4 foil made cohesive and *single* thickness placed over the partially condensed surface, the whole is thoroughly condensed with a smaller round plugger, care being taken not to allow the plugger to enter the gold extending over the edge. When thoroughly condensed, pass a thin, flat burnisher up by the ends, and, with a slight pressure, force them over the edges of the cavity in each direction making the burnishing carry the gold over the edges, thereby locking it and preventing tearing it out. Increase the pressure upon the burnisher until the ends are well condensed and shaped to the desired contour.

When this point is reached, place a couple of thin layers of cohesive gold over the whole and condense well. This is done for the purpose of locking each layer and giving edge-strength to the contour. Burnish this edge well, and then proceed with your second layer of soft cylinders, as you have done with your first, with the exception that the middle cylinders are to be slightly longer than the side ones, to allow for the swell of the contour. Burnish, and proceed as before. The crown surface can be finished by building up to the desired shape with cohesive gold, which can always be made to unite with the soft gold, if the first union is made with pieces of a single thickness, well united by mechanical force, and condensed with the soft gold. Contour fillings built in this manner do not need any finishing with a file or sand-paper, as the whole surface is left finished at each stage, and any amount of overlapping gold is burnished off, leaving a clean, smooth edge, and highly polished. By this method the entire wall edge is constantly in view, and one point is not left for another until the former has been completely filled and finished, which alone is enough to commend this method to our careful consideration.

DENTAL PROTECTION.*

BY DR. J. A. ROBINSON, MORRISVILLE, VT.

In casting around for something to inflict upon you, I came to the conclusion that very likely Dr. Perkins did not copyright the title of his most excellent paper of a year ago, and I could think of no better subject to consider than the one he used at that time—" Dental Protection."

I shall not speak of the protection very presumedly needed from the combination nor from the so-deemed patent fiends, nor shall I attempt to handle the subject with the ability of Dr. Perkins, neither shall I use it in the same sense he did. Perhaps it is not exactly clear to me that all of you need the kind of protection that I shall allude to, but I may reach some of you. I will say the most of us need protection in one way or another.

My thoughts, as I sit, run something like this: What are our meetings for? We have the name of having one of the very best of societies. And are we here to seek to learn something that will help us after we return home and are once more at work at the table or chair, to do our work better, easier, and with new vigor? Or simply to while away the time? To have a good time rather than to gain new instruction? The thought now arises, which will help us the most? To listen to a grand and eloquent paper on dental necrology of the sixteenth century? The ape in conjunction to the human family relative to dentistry in former times, or on any other quite interesting and exceedingly elevated subject, whose ideas must be grasped from the top rounds of a long ladder, or to a plain every day, near at hand topic, couched in simple language that all can understand, something that will draw others out that we may learn the ideas, manners and customs of each other? One may have a different and better way of overcoming some obstacles than others; if so, let us have it.

Perhaps this is digressing a little from our topic, but at the same time it will not harm us to think of these things; and again it is not so far removed as it first may appear. To make the present idea of dental protection a little clearer, I will mention a case. We all have had patients tell us they could never believe a word a dentist tells them. Why? Because some one has told them thus, and so about their work, and it never proved as they said, they warranted their work for so long and did not fulfill their agreements. This is not a special and unheard of case, but one that all can recall in many different ways. We have ways of protecting ourselves from this class of cases in a measure. If one and all will do their work honestly, agreeing to do only such work and in such a manner as we know we will and can do it, never promising more than we can and will fulfill. Thus we can, so far as we are concerned, get rid of this class of complaints; but, still, in this respect, we have to suffer for the misdeeds of others from which there is no escape until they are sifted out in some way.

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* Read before the Vermont State Dental Society, held at Rutland, March, 1891.

Another phase of the subject of protection is from so-called or self-called dentists. I cannot call them professional brothers, for they cannot attain to anything professional, and brothers they are not neither do they know a brotherly feeling—in their utter neglect to keep an agreement or contract with any one. I have had deal with many such, and at times am about to think that dentists are the worst class of men in the world to deal with the most given to little mean tricks, dishonest dealings and petty jealousies, always waiting for an opportunity to abuse one in some way. I have had this state of affairs to deal with all my dental life and so know what I am talking about. There is a partial remedy for this, one way whereby we may find protection. Some of them at least might be invited into our society, and when here we will try to make men of them, for the influence of the society is good, it will bring out the best side of a man to be in the company of good men. I can truly say that during a membership in this society for years I have seen and received nothing but the kindest words and expressions of the best of feelings among and from the members during our meetings or at other times, except in a very few cases. In this respect we are a mutual protection society with unlimited opportunities. We need protection for ourselves from doing anything that will be detrimental to ourselves or our business. A steady determination to do the right thing at the right time and in the right way, will help us to overcome the lack of respect the people may have for us, will help to counteract the bad effects of others unprofessional manner of doing business. We must protect ourselves from the habit of running in the same old ruts, get out of them, we must be stirred up; clean up, be clean in and about our work, be pleasant to all who come under our care; keep away from everything that tends to disgust our patients, for by so doing our business will increase and that is what we are all interested in.

Methinks I hear our patients cry "Protection. What do the dentists know about protection? Protect us from sitting hour after hour under the careless handling of a dirty dentist, one with dirty hands, tools, towels and everything else, whose clothes and breath are saturated with the fumes of tobacco and many times with what is worse than that." I do not think they are to be blamed if that be their cry, there is I am sorry to say a cause for it.

Above all talk honestly with our patients, don"t talk simply for the present and a few cents but be honest with them, thereby gaining their respect and in the end we will be the gainers. This is the sum and substance of the whole matter, we wish to do that which will make our work thrive, that it may bring in the more sheckels—but very few of us would work as we do if it was not for what it brings us. We want an honest deal, therefore let us deal honestly.

I have seen somewhere a copy of a circular that a dentist was in the habit of giving all his patients who had work done on their natural teeth, to this effect: Teeth that are filled will decay again if exposed to the same causes that produced the original decay, they are filled with an indestructable material and decay can be prevented by careful watching and cleaning. Have your teeth examined often, a small filling is less expensive than a larger, less painful to insert and presents a better chance to save the tooth. Clean the teeth every time food or anything else injurious to the teeth is taken into the mouth. Many medicines are very injurious to the teeth, therefore, it is well to clean them after they have been in contact with medicines. Use the best tooth powder, with a good brush and picks to clean the teeth and to correct acid secretions, bearing in mind that absolute cleanliness is of more value than the skill of the dentist. If you neglect your teeth the fillings are apt to fail, your dentist is unjustly blamed, and even your most intimate friends will not tell you that you have a bad breath. I have written another to apply, the bane of a dentist's life: Your teeth are made in a thorough and substantial manner and are as good as you can get, they are made of porcelain and on a base of metal or rubber which is formed, molded or swedged over a perfect model made from an accurate impression of your. It is impossible to change the plate unless brought to a greater heat or under a greater pressure than it is possible to bring it in legitimate use. Bear in mind that if the plate fits the mouth when first used it cannot be the fault of the plate which will not change, but of the mouth which will and does often change, if afterwards it does not fit as well as at first. You cannot return a broken comb, vase or other article you may break, why should you bring back your teeth when broken and expect me to make them good? There is a natural wear and tear to them the same as to everything else, if you drop them, bite threads or anything of the kind, expect them to break. Don't expect an upper set will give complete satisfaction when there are but few under teeth to support them. Do not expect too much of artificial teeth. If they become loose or broken in any way, bring them to me, I can repair them—for pay.

Wouldn't the use of these be a means of protection? And protection from the most of cases that the dentist is heir to? Wouldn't these answer a multitude of complaints? I think they would.

My ideas are rather disjointed, but perhaps you may be able to get at the gist of the matter, and that it may lead to some new ideas and thoughts whereby we may learn something to our advantage, is my wish.

I joined the Vermont State Dental Society eight years ago when it last met here. It was, I feel, one of the best things I ever did. I have enjoyed the meetings that it has been my good fortune to attend, which has been all but two, and I can truly say I have taken home with me new ideas, thoughts, and aspirations, gained from the meetings and from brother dentists to more than pay me every time I have attended, and so long as I am able I shall strive to attend the meetings of the society.

Do you know, or have you ever considered the different feelings there is between members of a society like this, from what there is between those who are not of us, or between us and them? There is a sort of Free Masonry between us that is lacking outside — between those who are of us for the good we may derive from such intercourse. There is no trouble, no backbiteing, no striving to pull down, rather there is a willingness to assist, to say a kind word, a friendly grasping of the hands that is good to see and better to feel.

DENTAL MEDICINE.*

BY R. M. CHASE, D.D.S., M.D., BETHEL, VT.

When invited by your committee to open the discussion upon Dental Medicine, I had hoped to find time to give, at least, a partial *resumé* of the many valuable drugs which the dental practitioner might call to his aid to alleviate human suffering, and by their means evoke a general discussion upon a subject which to my mind is sadly omitted in most dental conventions. While I grant it is too large a subject to be encompassed in one paper, or discussed at one session, and knowing that you are all familiar with the regular articles of dental medicine, my sole object is to speak of some of the later therapeutic agents which we as specialists of this great healing art, may judiciously use to keep pace with other specialists of general medicine and surgery.

Antiseptics I will place first upon the list, as I believe you will bear me out when I make the assertion, that those are first in importance to the dental practitioner, for without antisepsis no dentist can conscientiously practice his chosen calling. How to use, what to use, and when to use antiseptics in dentistry, is a field large enough to occupy in discussion a whole session, hence I will give only a few of the large group of antiseptics which one may choose from, notably, carbolic acid, creasote, salicylic acid, eucalyptus oil, iodoform, bichloride of mercury, peroxide of hydrogen, benzoic acid, boracic acid, aristol, bromine, phenol sodique, campho-phenique, chloro-phenique, listerine, and Dr. Seiler's antiseptic tablets,† etc., etc. Nearly all of these agents when brought in contact with disease germs destroy their vitality by arresting fermentation processes and preventing the decomposition of organic substances. Hence it is our duty to select such as are most pleasant to use, antiseptic qualities being equal. There are several elegant preparations in the market which from their composition are worthy of more than passing notice. Among these are listerine, campho and bromo phenique, $H_2 O_2$, etc. Listerine probably possesses a wider range of usefulness for the dentist than any one preparation, for in fact it may enter with propriety into nearly all prescriptions which the dentist may be called upon to write. As its composition is no secret the practitioner is justified in prescribing it. Tablets made from Dr. Seiler's formula are much handier and I find them as effective prescribed in proportion of one tablet to two ounces water. This makes a convenient form for dispensing to the patient and does away with bottles, etc. For a mouth-wash for ill-condition of the oral cavity it is unsurpassed. After extraction it prevents subsequent pain and soreness, and there is hardly a day passes that I do not prescribe it in some form. I much prefer it on occount of its agreeable qualities to phenol sodique, which was once a much lauded and very good preparation rightly used. Campho phenique, composed of 51 parts carbolic acid and 49 parts camphor gum, is a very elegant preparation for raw surfaces, pulp canals, pyorrhœa alveolaris, and for exposed pulps before capping. Bromo phenique I have used with good results in devitalized teeth when abscessed. The listerine or antiseptic tablets I use to clean my instruments, after operating it does not discolor as in the case when bichloride of mercury is used. If any of you present have not used listerine, I would recommend you to obtain literature upon it, which will give you a better idea than I can in a limited talk like this.

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* Read before the Vermont State Dental Society, held at Rutland, March, 1891.

† *Medical Record*, February 18, 1888.

Peroxide of hydrogen still stands at the head as a germicide, and undoubtedly is one of the best antiseptics yet discovered to annihilate germs, bacteria, or microbes. Charles Marchand's preparation, $H_2 O_2$, is, I believe, the best article in the market, as peroxide of hydrogen is very susceptible to certain conditions. To get the best results it should be kept in a cool place, well stopped, and when required for use as much as desired should be poured from a large bottle into a small receptacle, and only what is to be used should be exposed to the light. When small cavities are to be cleansed it should be injected with a small glass or rubber syringe, as metal should not be brought in contact with it as it quickly destroys its utility. For reaching pulp canals I find a small glass medicine dropper very convenient as by pressing upon the rubber bulb quickly it is forcibly ejected and is thus forced into the pulp canal without much trouble. I use a wooden tooth pick reduced in size to still further push it into the root. In treating all ill-conditions of the oral cavity I make it a rule to first rinse thoroughly the mouth with dilute peroxide, and then apply remedies suitable for the same. Much more could be said and undoubtedly will be brought out in this discussion upon this and other valuable antiseptics.

The other older antiseptics are too familiar to you all to take up for discussion. Whatever is used if it accomplishes asepsis, you have gained all that the best surgeons in the world can do, and you can in this direction add much to your success as a practitioner of dentistry. Disinfectants and deodorizers are so closely allied to antiseptics that I will not classify them separately as most agents of these classes possess virtues in common with each other with a few exceptions.

Before closing you will pardon me if I refer briefly to a class of remedies which are held in high esteem by the general practitioner of medicine, and while comparatively new are fast superceding the shot-gun prescriptions of the past, for the relief of many painful conditions which the dentist in his daily routine of practice might and is justified in treating. Acetanilide (antifebrin) is a pure white and crystalline powder of neutral reaction, but of a slight burning taste. Acetanilide is a very efficient antipyretic, besides being strongly analgesic and antispasmodic. The two latter we as dentists are especially interested in. Its anodyne effect upon neuralgia of the fifth pair of nerves, is often almost magical. For headache after a protracted dental operation it is especially useful. I usually give a patient a five grain dose, either in powder or in a more convenient form, compressed tablets to be repeated every two hours until relieved. Not over thirty grains should be given in twenty-four hours. Usually one dose is sufficient for an ordinary headache. For a severe case of neuralgia several doses may be given until the desired relief is obtained. I consider this superior, at the same time handier to prescribe than gelsemium, aconite, etc., which have commonly been used for this troublesome affection. Salol (salicylate of phenol), as its name implies, is of the phenol family, and is another valuable remedy for neuralgia, consisting of sixty parts by weight of salicylic acid and forty of carbolic acid, is insoluble in water, almost tasteless and odorless, and use five to ten grains once in two hours until three or four doses have been taken.

Antikamnia, meaning "opposed to pain," is a new analgesic antipyretic and anodyne furnished by the Antikamnia Chemical Company of St. Louis, is valuable in neuralgia and other allied disorders. It relieves pain and has no after effect, causing no excitation of the heart or cynosis. Dose three to ten grains, followed by a swallow of water. This remedy may be used in all cases as a substitute for morphia, without the after effects of opiates. It can safely be exhibited in from twenty-four to sixty grains during twenty-four hours.

Sulfonal is a very popular, prompt, safe and reliable hypnotic, which in proper doses produces quiet, natural sleep. This valuable remedy may be best given when patients suffer from persistent neuralgia, in doses from ten to thirty grains. This remedy has not the ill effects of morphine and the dose need not be increased by long continued use. I believe it is one of the best hypnotics we possess. Sulfonal is best administered at supper time, dissolved in hot liquids, usually a cup of tea, makes a good vehicle. It may be obtained in tablets of five and fifteen grains which makes a very convenient way of prescribing. It is unquestionably the best article we have to prescribe to a nervous patient after a protracted operation in the chair, as a small dose will give them a quiet, peaceful night's rest.

Phenacetine is another valuable analgesic which the dental practitioner may call to his aid. I have had good results in administering it in five grain doses, once in one hour until fifteen or twenty grains have been given. This seems to contol neuralgia and headache when other remedies fail. While some administer it as an analgesic in single doses of fifteen or twenty grains. I have not had occasion to use such large doses to control my cases. It is absolutely tasteless, and more agreeable to take than any other antipyretics, without the toxic effects which are claimed of some of the other preparations of this class.

Gentlemen, with these few remarks I will close, trusting that the few remedies which I have noted will, at least, serve to start a discussion, which will undoubtedly bring out many other articles in materia medica, which will be of inestimable worth to us as practitioners of dental surgery.

OUR DUTY TOWARDS THE DENTAL STUDENT.*

BY DR. W. H. WRIGHT, BRANDON, VT.

My first thought when invited to offer some suggestions on Dental Students, was the difficulty of saying anything upon so familiar a theme which would be of interest to so many veteran practitioners. Your own experience in this branch of our profession will furnish abundant material and illustration of the principles which should control in this duty. Yet the familiar may be recalled with profit sometimes, and in consideration lead to new interest and better practice of well known duties.

Among the most pleasing memories that come to me from the twenty-five years of consecutive practice in the town where my office was first opened, are those which are associated with nearly a score of young men who received their first lessons in our loved profession in my office. A feeling of keen satisfaction comes to me when I learn of any success attained by them. If Sir Humphrey Davy could say that his greatest discovery was Michael Farady, who he found a poor and unknown student of natural science in London and took into his employ as an assistant, we may perhaps do most for our profession by kindly aid to those who come under our influence in the beginning of their professional study. To the student it is a critical and important step, and can hardly fail to exercise a most decisive influence upon his future career. First impressions are apt to be lasting. He will naturally look up to one who is already what he hopes to become, and will insensibly be led to take him as a model of professional skill and character. He inevitably becomes familiar with our methods of work, and our standard will be his standard. There is in this relation the opportunity to perpetuate both the good and the bad qualities displayed in the instructor. He will multiply himself in his students, and his methods, his skill, even his personal character, will reappear either as a help or an incumbrance to our profession in the advance we all desire to see it make. The profession will soon become what the students of today are capable of making it, and it behooves us to look well to the latent talent, the character and the ideas of professional life possessed by the persons who seek to enter it. The unchanging law in the physical world is, that the germ in the embryo contains all the possibilities of the perfected growth of its natural species. And a similar law holds good in the higher realm of the intellectual and moral being of *man*. The embryo dentist must contain within himself the original qualities which will enable him when properly educated and the dormant powers drawn out and cultivated, to enter successfully upon his chosen work, not only with profit to himself but with credit to the profession and to the comfort of his patients. It is our plain duty to discourage such as are evidently deficient in those natural abilities and personal characteristics which are essential to success. It is kindness both to the public, ourselves, and the young man to see to it that the professional *misfits* be as few as possible. While we should not be too exacting or demand of the student what we expect of the finished practitioner, we should not hesitate when it is clear that we are inflicting another professional failure on the world. Among the first things to be impressed upon the student is the importance of being a gentleman. A gentle-man — a man who treats others with respect, and in a kindly manner is never out of place in any walk in life; but in professional life, which consists so largely in dealing with others, he is especially desirable. The greatest skill will hardly atone for a rough manner, and the lack of good breeding in those to whose treatment the patient must for the time submit.

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* Read before the Vermont State Dental Society, held at Rutland, March, 1891.

As it is from the cultivated classes of society that the great bulk of our patrons come, the dental surgeon should be able to meet them as a social equal, a man entitled to their respect and confidence by the character which he sustains in the community. Everything pertaining to personal manners and attire are here of importance and can do much to win the favor and patronage of the more intelligent. A professional man holds relations, not only to the persons who are under his care, but to the community. There is a certain social position and influence awaiting the skillful practitioner which is a debt of honor he owes to the public to maintain with dignity. Cleanliness is next to godliness and will go far to lead the patients to expect like care and neatness in the exercise of professional skill. Nor are such minor matters as the tone of the voice as expressing force of will, to be neglected as going a long way in bringing the patient to bear the necessary painful operation. Perhaps the severest test of this is in dealing with children. Do not let the students become possessed with the false idea that if they can deceive the little ones and succeed in performing the required operation, that they have made a good point. Far from it. Among my students, who is now on the clinical staff of one of our foremost dental colleges, is a young man who was led to study with myself, from the manner in which I succeeded with him while performing a painful operation while he was a young lad. Kindness to the little ones should be the universal rule. Another point worthy of attention is, do not keep students forever polishing dental plates in the laboratory. Give them an opportunity to perform more difficult pieces of work. Criticise their work kindly and endeavor to inspire them with the importance of attention to details, as enabling them to reach the highest mechanical perfection. Care, patience, assiduity are here the elements of the best successes, and intelligent criticism is helpful in enabling the student to see just where he has come short. And what is the remedy? In a word, it is our duty to seek to inspire our students with ever increasing enthusiasm for their chosen profession, so that each succeeding effort shall come nearer the mark of perfection. We can thus do much to broaden the student's conception of his work, and to impress upon him a high standard of excellence which will follow him through all his career and enable him to deserve and win success. Loving our profession and knowing how essential this high conception of our work is to the truest success, we should seek to cultivate and strengthen it in those who come under our influence. While it is just that the profession should yield a pecuniary return, "for the laborer is worthy of his hire," yet eminence in a profession is not begotten of a mercenary view, but is ever due to an intrinsic liking for our calling and a high professional aim in its practice. We should impress upon our students the necessity of thorough study. Dental science offers wide range for study to one who has a love for investigation into the widening fields of the true knowledge of nature. The demand in all departments of professional work is for the thoroughly educated man who is conversant with the latest discoveries and methods, and thus not only fitted to use what others have made known, but to be himself an investigator in the sphere of his active work. The day is passed when the dentist can enter upon his work after a short term with the practitioner. The dental college offers opportunities for study and the acquirement of knowledge which no office can contain. The age demands thoroughly equipped men and will patronize no other. Our young students should be impressed with the importance of this wide and liberal course of study as essential to the best results. We can thus do much to prevent the lowering of the standard of the profession by the entrance into it of those whose poor preparation must ever exclude them from the ranks of successful dental surgeons and bring discredit to the profession. We have but to remind ourselves that these young men are to be our successors, and that upon them soon the responsibilities of maintaining and enlarging the scope of our work must depend, to realize how large is the field of usefulness opened here, and how important the obligation, how we use our influence to secure an advance on the gratifying progress which dental surgery has already made. With faithful and loving discharge of these familiar duties in the dull routine work of our offices, we may do much to hand down our profession to those who shall come after us unimpaired in its dignity and achievements, and to secure for it greater triumphs in the future.

VERMONT STATE DENTAL SOCIETY.

The fifteenth annual meeting of the Vermont State Dental Society was held at Rutland on the 17th, 18th and 19th days of March. It was one of the best meetings which the society has ever held, the attendance good, fully sixty dentists present, among them several visiting dentists from Massachusetts, New Hampshire and New York.

Wednesday evening Dr. C. A. Brackett, of Newport, R. I., gave a very interesting talk on micro-organisms which brought the subject out in so plain a light that no one could help being interested. After this Dr. W. S. Curtis, of West Randolph, read a paper on Plastic Bases and Pinless Teeth, see page 367, exhibiting a plain pinless tooth of his own invention which attracted considerable attention. The tooth is quite simple and looks practicable. It has as great or greater strength than a pin tooth, being retained in the base by carved depressions in the sides.

Thursday forenoon, after the routine business, came the President's Address, see page 361, and papers by Dr. G. F. Cheney, of St. Johnsbury, on the Treatment of Proximal Surfaces, see page 370; Dr. A. J. Parker, of Bellows Falls, For what are we Laboring?" see page 374; and one by Dr. J. E. Waitt, of Boston, Mass., A Rapid Method of Inserting and Furnishing Contour Fillings without the Aid of a Matrix, see page 379. These papers were all discussed at considerable length, after which Dr. Waitt exhibited several specimens of necrosed bone.

Thursday afternoon until four o'clock was devoted to clinics which were unusually interesting. Dr. G. A. Young, of Concord, N. H., inserted three or four large proximal fillings. One of these cavities the Doctor prepared, filled and finished, using thirteen sheets No. 3 gold, in twenty-eight minutes. Dr. Young is probably the most rapid gold-worker in New England. Dr. J. E. Waitt filled a proximal cavity in a bicuspid, illustrating the method described in his paper, which was pronounced a very fine filling. Dr. E. M. Nelson, of Boston, demonstrated a method of inserting inlays, using thin gold plate for a matrix, filling it with porcelain.

At four o'clock the society was called to order and papers were read by Dr. J. A. Robinson, of Morrisville, on Dental Protection, see page 382, and Dr. R. M. Chase, of Bethel, on Dental Medicine, see page 386.

At five o'clock the society with ladies present were invited to the residence of Dr. Thos. Mound where they were received with most cordial hospitality.

The evening was devoted to a banquet at the Bates House where all seemed to enjoy the good things provided. Music was furnished by Brehmer's full orchestra and toasts were responded to by several gentlemen.

Friday morning at nine o'clock the meeting was called to order and officers for the ensuing year were elected. Dr. W. S. Curtis, President; G. F. Cheney, 1st Vice-President; A. J. Parker, 2nd Vice-President; Thos. Mound, Secretary; W. H. Munsell, Treasurer; E. O. Blanchard, W. H. Wright, W. H. Kingsley, Ex. Committee.

Burlington was selected as the next place of meeting, and the society adjourned till the third Wednesday in March, 1892.

C.

Prosthetic Dentistry.

[This department will be devoted exclusively to Prosthetic Dentistry, including Crown and Bridge-Work. We shall be pleased to receive from our readers such practical contributions, short items or queries upon this subject as they choose to contribute.]

THE RESTORATION OF BROKEN INCISORS.

Among children and youths it not infrequently occurs that from falls or other accidents one or more of the incisors are broken off to a greater or less degree. In such cases the problem of effecting a suitable restoration to usefulness and sightliness is calculated to tax the resources of the most skillful dentist.

When, however, about half of a crown is absent and the pulp involved to a degree incompatible with its preservation, it has seemed to me desirable to retain the crown stump rather than to amputate it and place a porcelain crown on the root. My own method of procedure is as follows: We will suppose the superior centrals to have been broken and the right central selected as a model for the description, which will equally apply to the other central or to any incisor under like circustances.

Free access to the pulp-chamber is gained by cutting an oval-shaped opening. After thorough treatment and the subsequent filling of apical part of the canal, a countersink or recess is cut in the end of the crown, pteferably with an engine pin-centered fissure bur, followed by a wheel-bur cutting also on its end to form the rearward slot of the recess. A piece of thick gold or platinum plate is drilled, cut, and then fitted in the recess. A suitable post is then inserted through the plate, to which it is inserted through the plate, to which it is secured by wax, removed, and soldered. The end of the post is then cut off flush with the plate, and the piece replaced on the crown leaving the plate projecting from the recess. A short, thin cross-pin matching-shade plate tooth is selected, ground to fit the smoothed natural crown end, and then backed with thin platinum, which is shaped and conformed to the lingual face of the crown. With the plate-punch and a small fissure-bur a slot is cut in the extension of the backing to allow the plate to project through it, replaced in the crown, secured with hard wax melted over it with a hot burnisher, removed, invested, and soldered so that the gold flows over the backing and its extension. This is then secured in the root and to the crown with cement, a thin film of which almost invisibly joins the porcelain tip to the crown and makes an impervious joining of the backing extension to the lingual face of the crown. The recessed plate and backing extension prevents any turning of the structure, while the post secures it against displaccment under the strains of incisive use.

Much of the preliminary work may be done from an accurate impression taken after the ends of the crown have been ground smooth and true, but the fitting, assembling, and soldering of the pieces should be done while the patient is present, in order to insure the nicety of adaptation on which the permanent success of the operation will depend.

A somewhat extended and very satisfactory experience in this class of restoration affords a reasonable expectation that the method will also prove acceptable and useful to the profession.—Dr. E. Amend, *Cosmos*.

METAL CASTS FOR VULCANITE AND CELLULOID.

Every dentist who has worked these materials for years on plaster-casts knows their many faults. While I have no trouble in getting smooth plates, the plaster-cast often checks in closing the flask, causing misfits. Plaster, by its porosites, absorbs much moisture while being vulcanized, and thust changes the shape of the cast. I noticed, in a recent article by Dr. F. A. Green, he agrees with me that "many misfits are caused by the expansion of the plaster model"; but "mixing marble dust with the plaster" weakens the plaster-cast, and is but little gain in overcoming the expansion.

I find the only remedy for the difficulty is to use a thin, hollow metal cast, of block tin. To make these casts, it is necessary to have two impressions; the first taken with wax; oil, and pour with Teague's Impression Compound. Next take an impres of the mouth with Teague's Compound; mix it quite thin, and be careful to get a perfect impression. The cup used for taking the second impression should have the bottom perforated all over, the holes being about one-eighth inch in diameter; also, a row of holes the same size, extending entirely around the rim, and about one-fourth inch from the top. Before filling the cup, cut a piece of cheese cloth to fit it; wet the cloth, and place it in the bottom of the cup. Should you wish an air chamber in the plate, examine the mouth carefully, and find where the suction will do the most good; the with a pencil, outline it on the impression taken last; with the engine and a No. 5 round bur follow around the outline and pit, making the pits one-sixteenth inch apart; complete the vacuum by going over and pitting the whole enclosed surface. Good adhesion can be got for lower plates by beginning on the impression, about one-fourth inch from where the heel of the finished plate will reach, and run a line of pits entirely around the impression, in its deepest parts, to within one-fourth inch of the opposite heel; use a small bur, then, for the upper impression. The model obtained from the wax impression is to be used as a core for the metal cast. When sufficiently hard, separate the core from the impression, trim as desired, cut one shallow groove on each side, midway between the centre of the arch and the alveolar ridge; these grooves are to be used as pouring-gates. Place the core in the impression, letting it rest on the pin-heads, and fasten with soft binding wire (such as is used by jewelers): dry the impression and core over a stove till *perfectly dry.* Melt pure block tin and pour it slowly into the mold while still hot; when cool remove from the impression, and with cutting-pliers cut off the pins close to the cast. This gives a smooth cast that is unchangeable under all conditions, never breaks, and the hollow cast is the same thickness in all parts. It can be easily separated from the vulcanized plate, by knocking out the core and pinching the two sides together.—DR. WILLIAM H. STEELE, *Items.*

SORE MOUTHS FROM RUBBER PLATES.

IT is often reported that this or that patient cannot wear a rubber plate, as it makes the mouth sore and spongy, causing absorption, and some dentist or physician has said it is poison to their mouths. There may be some exceptions, but in nearly all these cases, the rubber is not to blame. I have seen as bad a condition of the mucous membrane beneath a continuous gum plate as I ever saw beneath a rubber, also as much inflammation and absorption; yet it is not as common with continuous gum, gold, or other metal plates, because they like to see the metal shine, and they work to make it shine. On the other hand, the rubber will not shine, and the color is such that but few know when they are clean. The bacteroid growths are so near the color of the plate, and they adhere so tightly to the plate that brush and water will not bring them away; neither will careless brushing with pumice stone. These bacteroids that grow on the plate have the same effect on the mucous membrane of the mouth, as they do on the gingival margins when they grow on the teeth. In either case there is irritation, redness, tenderness and a spongy condition. To remove them from the plate thoroughly, some caustic alkali must be used to soften them—ammonia, potash, or soda. To illustrate: a lady came to me who had been wearing a temporary rubber plate, and from whom several had advised a metal plate, as rubber was poison to her mouth. Also, several physicians had told her she must not wear rubber any longer. As she could not afford a metal one, she applied to me to see what I said about it. I told her I thought she could wear rubber as well as anything else, though the whole roof of her mouth looked as if the blood was ready to run from every point. I showed her how to clean her plate, which I had her do twice a day, requiring her alao to brush the roof of her mouth morning and evening with a weak solution of cider vinegar. At the end of ten days her mouth was healthy, though she wore the same plate (minus the "bugs") both night and day. After treatment she had a permanent plate of rubber. After three years, her mouth is still in good condition.

To satisfy yourself with an experiment, take the next plate that comes in, wash it so as to remove all the food and brush it as well as plates are usually brushed; then place the plate in a strong solution of ammonium hydrate and see the little tufts swell up on the surface. In half an hour you will be astonished at their size. Of course I do not claim this will occur in every case, but almost sure to do so when it is said they cannot wear rubber.—W. H. Jackson, D.D.S., *Items.*

THERMOMETERS.

A HINT.

There are some thermometers attached to vulcanizers which give considerable annoyance, in the process of vulcanizing, by the column of mercury becoming *divided.* The divided portion will remain at a fixed point in the top of the tube, while the remainder descends into the bulb when the heat is removed. This gives annoyance, and uncertainty as to whether the heat has been kept up to the proper degree. It has been recommended to remove the thermometer by unscrewing it from the top of the vulcanizer, and by taking it in the right hand striking it sharply into the hollow of the left hand, being careful not to strike the bulb (hit only the case) to avoid breaking the thin glass (which is only an extension of the tube) of which it is made. This will *sometimes* cause the separated columns of mercury to unite and no further trouble of the kind will occur. This, however, will not always be accomplished, and we have found when a trouble of this kind occurs with a thermometer, to unscrew it, as advised, but instead of seeking to make the mercury in the tube unite with that in the bulb, to turn it *upside down*, and make what is in the bulb unite with what is in the tube. Worked in this way we have found the mercury to coalesce perfectly, and not cause annoyance of separating as it sometimes does.—*Dent. Off. and Lab.*

THE RELATIONS OF MEDICINE AND MUSIC.

In an article on this subject, Dr. Ephraim Cutter makes one reference to the influence of artificial dentures on the voice. Speaking about those causes which have a detrimental effect, he says: "Among reflex causes, I would suggest bad teeth—and false teeth with a rubber basis. I have seen such good results follow from the use of dentures where the teeth and plates are of the same mineral material, that I recommend them to those who have trouble with artificial teeth, and who professionally use the voice. Cases have been known to sing with these dentures who could not with the celluloid and other plates." This is not only an interesting, but an important point to determine. One cannot see, provided the plates are of equal thickness, in what a porcelain plate is more like the normal palate than a vulcanite one. These are, however, just the points in which a little observation is worth a whole heap of speculation, and moreover a good deal of evidence is needed before anything really definite can be proven. In the daily routine of practice there may not be much time for much original work and thought, but here are points of great importance, which a man must settle for himself, if he would do justice to his patients. We only ask him to make his conclusions public, that others may examine them and benefit thereby.

PLASTER IMPRESSIONS.

I HAVE never heard of any one using my methods of preparing plaster so as to avoid the adhesion of the plaster to the teeth. The adhesion is due to the great affinity of the plaster for water, and unless that affinity is perfectly satisfied in the adding of water to the plaster in making the mixture, it will absorb every bit of the lustre from the teeth and then cause an adhesion. The first point then is that the plaster shall be thoroughly mixed. Have a large quantity of water—all that it would take up—and then wait long enough for the union to be complete; that is one point. The next point is that I would add to the plaster from one-third to one-half of pulverized pumice, according to the strength of the plaster. Some plaster would not take more than one-half, while others would take two-thirds of pulverized pumice; then it requires less water and the adhesion to the teeth is almost entirely prevented, and you get your impression out of the mouth with less liability to fracture.—L. C. INGERSOLL.

THE PROCESS OF CROWNING OR CAPPING ROOTS THAT ARE BROKEN DOWN BELOW THE FREE MARGIN OF THE GUM.

THERE is no practice better or more reliable than that of building up or restoring the lost portion of the root with copper amalgam and capping with a gold crown, or ferule of gold and porcelain facing. It is also a good practice to use it as a filling material at the cervical margin of a cavity made for the attachment of bridges to the natural teeth by means of a bar, at which point it is sometimes impossible to properly insert gold as a filling material.—R. Y. H., *So. Dent. Jour.*

HOW TO COOL OFF.

PUT your gold plates, crowns, bridges, etc., direct from the fire or blaze, into an old newspaper, wrapping the paper quickly and closely about the mass. The piece will cool slowly, and in so doing rid you of all anxiety as to breakage during the cooling process.—*Odont. Jour.*

A CONVENIENT CLAMP.

Use half-inch staple tacks to hold bits of gold or other plate together while soldering. Clamp them to place by means of flat nosed pliers.—*Odont. Jour.*

What We See and Hear.

[We are always pleased to receive short, practical articles for this department, and invite any to send brief descriptions of such appliances, devices, methods, remedies, etc., as will be of interest to the profession.]

A ropy saliva is corrected by use of soda-water because it dissolves the mucus, so says Dr. Collett.

Explosive Mixture.—Glycerine and permanganate of potassium make an explosive mixture. Don't use it.

Devitalizing Pulps.—Dr. Headridge inserts a carbolic dressing to allay inflammation, where pain is present, before applying arsenic.

Codified Ethics must and will be soon buried, predicts a prominent New York practitioner, so says the New York correspondent in *Dental Review.*

Pulp Protector.—Copal picture varnish will do to paint over an exposed pulp. Dry the cavity and paint with a *bleached* brush.—*Dent. Review.*

Caused by Smoking.—Dr. Simms reports cases of papillary patches of inflamed mucous membrane on the hard and soft palates resulting from smoking tobacco.

The Prevention of Phthisis.—A French writer observes that the prophylaxis of tuberculosis may be summed up in five words: "Keep water in the spittoon."

For cold abscess a solution of iodoform in ether is again recommended after aspiration. For acute abscesses, aspiration, then inject 1-1000 bichloride of mercury.—*Review.*

Impacted Tooth-Plate.—Dr. Furrier reports a case of silver partial being impacted in the œsophagus for five years. Oesophagotomy performed, plate secured and patient recovered.

Non-sympathetic Dentists.—There are many good operators who are qualified to take charge of children's teeth. They fail to sympathize with the child and fail to appreciate the position the child occupies.—*Dr. Steen.*

A Solid Foundation.—Make a saturated solution of zinc sulphate in water and use it with the powder in oxychloride packages and see how hard it will become. Use it as a foundation for filling or in pulpless tooth crowns.—*Review.*

Supernumerary Teeth.—At the Manchester Odontological Society Mr. Linnell exhibited a model of the mouth of a patient which showed on the left side of the lower jaw a cluster of five well formed bicuspids and on the right side a supernumerary tooth in the region of the bicuspids.—*Brit. Jour.*

If we keep a child's teeth clean and the cavities all filled till he is 12 years of age, and have taught him the importance of properly cleansing them, we have contributed largely to his future happiness, and as he grows older he will appreciate the interest you have taken in the preservation of his teeth, and quite likely will reciprocate by manifesting an interest in your welfare. —Dr. Steen, *Ky. So., Review.*

Removing the Pulps of Teeth by the Use of Crystals of Cocaine.—Take a drop of oil of cloves and add enough cocaine to that to make a thick paste and introduce it into the pulp after having first put the rubber dam on the tooth; then by taking a broach, slowly work it down; with a bur open up the opening slowly, and in ten or fifteen minutes you can remove the pulp from any of the anterior teeth. Where arsenic has been applied of the pulp and the patient returns with pain, I find we can get better satisfaction from the application of cocaine.—Dr. Harper, *Ill So.*

Consultation—Should it be free or for a fee? That is the question.—No dentist should do his profession so great an injustice as to habitually hold consultations with his patients without receiving a fee. Such a course, while no doubt quite prevalent, is far from elevating to dentists. It should be practised only in free dispensaries and hospitals. Among a few of the members of the profession of our city, hours for consultation and advice are announced on their appointment cards, and during *those hours* *only* will the dentists see patients for consultation. Such a disposition of time makes it possible to see patients for short intervals, and, besides, what is of more importance, the dentist is not interrupted during the time he is engaged filling teeth, or performing other operations, which require careful continuous attention. Whoever seeks the advice of a professional man does so for the purpose of benefiting himself, and there is no reason why a suitable fee should not be received by the consulted for the sevices rendered.—DR. T. W. BROPHY, *Dom. Jour.*

PEROXIDE OF HYDROGEN.—In looking over the April *Items*, I see on page 253, in speaking of $H_2 O_2$, it recommends the throwing away of the drug when it is old. This was my habit till I accidentally learned through experimenting that by warming it over a spirit lamp it will again respond.

Good peroxide when brought in contact with pus, blood, serum, or any disorganized organic structure, will effervesce, provided liquor is at a proper temperature to give off its oxygen.

Just bring the *fresh* liquid near the freezing point and it will no longer be active; but warm that up, and it will respond. The higher the temperature, the more rapidly will it give up its oxygen, which is the chemical value of the drug. This very fact of the temperature affecting the activity of the drug is why it will deteriorate in warm places.—W. C. DAVIS, D.D.S., Oxford, Iowa, *Items.*

ANTISEPTICS FOR STERILIZING CAVITIES BEFORE FILLING.—The best results are obtained, as we should naturally expect, where rapidity of action is desired, by substances which are readily soluble in water; it is for this reason, I take it, that the essential oils manifested so little action, their insolubility in the juices of the dentine preventing their rapid permeation of it.

In regard to the special results of these experiments I am, as intimated above, not quite prepared to express a decisive opinion, and reserve the right to modify my present views in any subsequent communication. At present I should head the list with the *trichloride of iodine*, were it not for its acid reaction, in regard to which further investigations are necessary.

There can also be no doubt about the powerful action of a five per cent. solution of *bichloride of mercury*. The only question here to be taken inio consideration is whether it might not lead to a slight discoloration of the tooth. This I doubt, though it might be advisable to restrict its use at first to the molars.

I do not consider that there is any danger attending the application of a pledget of cotton saturated with a five per cent. solution to a cavity of decay, as such a pledget would contain but a fraction of the usual internal dose of the bichloride, and might even be swallowed with impunity. I myself have used still stronger solutions in connection with the teeth.

As for the *peroxide of hydrogen*, which is one of the most agreeable of all our antiseptics, I am inclined to think that where *but very minute traces* of carious dentine are to be sterilized a ten per cent. of it will act efficiently.

Where the antiseptic may be left for some time, particularly over night, concentrated carbolic acid will be sufficient to effect the sterilization, provided the cavity has been at least partially excavated before application. The pledget must, however, be well saturated with the solution, otherwise the quantity will be too small to permeate more than a thin layer of dentine. It has the advantage of obtunding the dentine at the same time, while an injurious action upon the pulp is not to be feared, except it be almost or quite exposed.—Dr. W. D. Miller, *Cosmos.*

Dental Dots Distilled.—Take an ordinary watch crystal, such as can be obtained of any jeweller, set it in a lump of plaster-of-Paris, trim neatly and paint, color or bronze, to suit your taste. This makes a very handy and cheap little tray for holding amalgam or other fillings at the operating table.

Cast a little dome of lead or other soft metal somewhat in the shape of half a walnut, this will answer for a stand, insert a piece of knitting needle three inches long, sharpen the top, cut bibulous paper into little squares, say two inches or less, fill the wire full, one square at a time. This will be found handy on the operating stand of every dentist, as a square can be easily picked up with the pliers, and is much better than cotton.

Any dentist can shapen his burs and drills when dull. There is no excuse for any one using dull instruments and inflicting unnecessary pain on his confiding patients. Take a thin corundum and rubber disk, such as is used for separating teeth; this will answer for all the medium and larger sized burs.

For sharpening drills, excavators, chisels and other small cutting instruments, use Dr. McLean's method, by making a disk two inches in diameter, laying thereon a disk of cardboard and on the top of this a round piece of fine cutting emery paper, fasten them on an engine mandrel. There is nothing better for sharpenieg fine-edged small tools. I keep a dozen different sizes and grades of emery disks on hand all the time. No dull instruments used in this office. By using a leather disk similar to the above, you can make your excavators and chisels so sharp that they will split a hair.

Any dentist can draw the temper of his separating files by passing them through the flame of a spirit lamp till blue; they will then be nearly equal to the new flexible files lately brought out, and can be bent into almost any curve desired.

Get three or four pieces of hard wood turned to fit your lathes; have one round like a marble, the others cone-shaped, size to suit yourself; give them a thin coat of Spaulding's glue; sprinkle emery all over them while wet; lay by till thoroughly dry. These, made with different grades of emery and used dry, last a long time, and are easily renewed; they cut a plate down rapidly, and are much safer than burs.

Celluloid disks, used at the back of sandpaper disks, serve to stiffen and keep them in shape, and adds to their cutting qualities. Any dentist can make them out of thin celluloid sheets, to be had at any milliner's store. Strips of the same material, used with fine corundum powder, make the strongest polishing strip I have ever used; the celluloid should be the rough or unglossed kind, as it holds the powder mach better than the glazed or highly glossed.

A piece of aluminum wire makes a very handy carrier for conveying iodine, aromatic acid or any corrosive agent, except muriatic acid. It answers the same purpose as gold or platinum, being non-corrosive, soft, pliable and clean; can be bent or formed into any shape and only costs a trifle.

Aluminum wire is very useful for many other purposes in the dental office, such as strengthening rubber plates, pinless teeth, making canal points, etc. I have lately had made to order, some aluminum wire gauze for strengthening rubber plates—it works nicely; by covering the model with gauze and packing rubber over it we can make much stronger plates, the rubber is tougher and more evenly vulcanized, and what is better, it is not such a non-conductor as an all rubber plate. This gauze is so soft and pliable that it can be easily fitted on any model by merely pressing it with the fingers.—Dr. D. V. Beacock, *Dom. Jour.*

Malposed Teeth.—Mr. Truman narrated "a case of eruption of a canine tooth under the chin." The patient was a little girl aged six, and a left lower permanent canine erupted below the chin. The history of the case was, that three or four years ago she had diphtheria very badly. When she was convalescent, about a fortnight after, the lower jaw began to swell uniformly and an abscess formed discharging a good deal of pus. Soon after two teeth were extracted liberating a quantity of pus, and a sequestrum separated, when matters seemed to quiet down. Subsequently, however, four pustules appeared on the chin; these burst, leaving sinuses from which necrosed bone came away. Three of these healed, while from the fourth, eighteen months later the left lower permanent canine appeared.

· Referring to similar cases recorded, Mr. Truman mentioned a specimen of a lower wisdom now in the society's museum; also a case given in Mr. Salter's book, viz., both superior lateral incisors appearing in the nostrils. There was also a skull in the museum of the Royal College of Surgeons which showed the eruption of an upper right canine tooth into the nostril. Mr. Matheson had told him of two cases, one, that of Dr. Ward Cousins. In this a temporary left canine had become encysted in the left orbit, and so far as Mr. Truman could understand, the tumor was removed. In another case under the care of Mr. Carver, of Cambridge, a boy, six and a half years old, had a canine covering the right lower eye-lid. This tooth had commenced to erupt at four and a half.

Mr. Storer Bennet said that it would be recollected that during the year of the presidency of Mr. Charters White a number of skulls and jaws of prehistoric man taken from a Wiltshire barrow, were shown. One of them was the lower jaw of a child, in which there was a partially developed lower canine tooth inverted; this had not pierced the jaw; the crown and a small portion of the root had been developed, and the crown pointed downwards.

Mr. Morton Smale said three or four years ago a case had occurred at the Westminister Hospital of a permanent canine erupting into the nostril. The patient's age was seventeen or eighteen. The tooth was removed through the nostril. The important thing was to account for the tooth becoming inverted and presenting itself in this position. So far Mr. Smale had not yet met with any one who could satisfactorily explain it.

Mr. F. Newland-Pedley mentioned having removed a canine tooth through the nostril. In that case the patient had a harelip.

Mr. Wm. Hern stated that a little patient, the subject of harelip and cleft palate, was now attending the Dental Hospital. He had seen the patient on several occasions, and about six months ago removed a supernumerary tooth from the nostril. The case was similar to that mentioned by Mr. Newland-Pedley.

The president remarked that many years ago a lady came to him wearing an artificial denture which she had worn for years. Underneath the lower plate he found two canine teeth lying horizontally on the gum. They were perfectly formed and perfectly clean.

Mr. F. J. Colyer showed the model of a case in which the canine had erupted underneath the tongue. The patient a female, aged thirty-five gave no history and suffered no inconvenience.

Mr. Wm. Hern said that he had a model of a case of a misplaced canine. The patient was a young woman who applied at the Middlesex Hospital, complaining of the looseness of the left upper lateral incisor. Necrosis was found to exist, and after removing the tooth and a small portion of the anterior wall of the socket, he came upon a white hard body imbedded almost horizontally in the jaw in an oblique direction. There was also a history of previous necrosis following diphtheria. So it seemed to Mr. Hern that necrosis might have been the cause of the inversion.

Mr. H. Woodruff mentioned two cases in his own practice which occurred almost simultaneously. One, a canine occupying a horizontal position on the outer portion of the arch and above the roots of the other teeth, and the other growing quite up in the palate and also in a horizontal position. In both these cases the patients were between seventy and eighty, and the abnormality had given no pain up to that time. But at the time of consulting him they began to give considerable trouble, and he was fortunately able to remove both.—*Great Britain Odont. So. report, Brit. Jour.*

Societies.

"Wherewith one may edify another."

MICHIGAN DENTAL ASSOCIATION.

The thirty-sixth annual meeting of this society will be held at Sault Ste. Marie, August 18, 19 and 20, 1891. Every one is familar with the advantages this beautiful place offers. A more delightful place could not have been chosen, and it is hoped that all who can arrange to do so will attend the meeting. Further particulars will be furnished upon application to the Secretary,

Dr. J. Ward House,
Grand Rapids, Mich.

AMERICAN DENTAL ASSOCIATION.

The thirty-first annual meeting will be held at Saratoga Springs, N. Y., commencing Tuesday, August 4, 1891, at 10 o'clock A. M.

President, A. W. Harlan, 70 Dearborn Street, Chicago; Secretary, George H. Cushing, 96 State Street, Chicago.

DENTAL DEPARTMENT—UNIVERSITY OF MICHIGAN.

The forty-seventh annual commencement was held June 25, 1891. The following are the graduates: W. H. Booth, Mich.; J. F. Cook, Ohio; M. V. del Valle, Porto Rico; R. C. Devries, Mich.; A. A. Deyoe, Mich.; F. C. Dorrance, Mich.; C. H. Edwards, Mich.; F. W. Fleming, Iowa; W. J. Green, Mich.; F. S. Henry, Florida; W. E. Kearns, Mich.; G. G. McCoy, Ohio; A. McGuire, Mich.; C. F. Metcalf, Wash., D. C.; A. W. Muleller, Wis.; P. P. Nelson, Mich.; C. S. R. Osius, Mich.; M. M. Park, Ontario; W. D. Reed, Mich.; C. R. Scott, Mich.; A. L. Sickler, Mich.; C. P. Stone, Mich.; J. R. Taft, Ohio; L. C. Thayer, Mich.; V. E. Tuttle, Mich.; E. Waterloo, Mich.; Lucy Waterloo, Mich.; W. Williams, M. D., England; B. G. Winans, Mich.

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Contributions.

"A word fitly spoken is like apples of gold."—SOLOMON.

PROFESSIONAL FEES.

BY DR. GEORGE A. MILLS, NEW YORK CITY.

"THERE is nothing great that is not founded on sincerity." What relevancy the above question may have with the topic of this article, may be better seen further on than at the outset. I have started out often to write on a given subject for the purpose of drawing on my resources and finding out what I did have in store of thought; and by such a course I have found myself more intelligent at the ending than when I began. For the sake of burning all bridges behind me, I am going to put myself on record, by saying that I have not seen an article that was in any large sense worthy of this subject. I well recall my feelings of interest, when on the receipt of my monthly journal,—the *Cosmos*, —not long since, my eyes fell on the title that heads this article —"Professional Fees," by Prof. Darby, of Philadelphia. My esteem of his genial good qualities suggested something worthy of interested attention. But, alas! in closing I said, "What have I gained of profit by this article?" To ease down the genial

Professor, I will admit that this subject is one of vast perplexities when considered from a standpoint above the commercial. So far as my observation extends I do not recall any writings that have gone outside of the commercial view. I still hear the echo of one who has received honor, accorded because of ability above the ordinary, "my family must live," and in the same breath continued to discuss about "Our Profession." If the latter term is true—"Our Profession"—than we cannot separate ourselves from high moral grounds, and I shall advocate here that the man who pursues his practice without the admission of this fact, is a charlatan, and has no defense from the charge. I am not forgetting that human nature is more or less selfish, and what we may admit in principle is not always easy to put into practice.

No one would characterize a physician of the body, as we say, anything but a heartless knave, who would weigh the quantity and quality of his remedies for a patient in the moment of suffering by the dollar scale. Yet they may do so, or they may refuse to administer their ability, because they may be in doubt about their remuneration. Here will apply the quotation, "There is nothing great that is not founded on sincerity." I am not sufficiently qualified to say how generally the high moral ground is emphasized by those in charge of our schools, who assume to teach young men for the qualifications of their profession. Should they fail themselves to appreciate the importance of this subject, we ask, "Does the water rise higher than the fountain?" I once was trying to illustrate to a student this principle in advocacy of giving our best services regardless of money; that is, such services as would not be an injury, but a help, who persisted in justifying the self-interest. I asked, "How does the practice apply if practised on your child?" His evasive reply was, "You can teach me dentistry, but not morals." I can easily accept that such a weakness of moral obligation will and does frequently overtake not a few. But when one stands in earnest advocacy of the practice, then I must discount on the sincerity of such in assuming the responsibility of what is embraced in an honest practice. All dentists are morally bound to the same obligation as the physician. No man can escape the fact that he is here, and no man can be much above the animal that does not often inquire of himself, "what is he here for?" If those that read this article will recollect they will find that the mass of our discussions are carried forward on the dollar basis, and it often occurs after a case in practice has been placed before our societies, a question is raised, well, that may be all right in theory, but will it pay? This occurs so often, and among those who occupy the front seats, that it cannot be out of place in passing.

I have noticed the fact of our obligation being the same as the physician's. Every time we assume to repair a tooth attached to the body, then we are in the place of the physician, we are bound to the law of moral obligation. A tooth is no longer to be regarded as a valueless organ, to be removed from its socket in a ruthless and indifferent manner, regardless of consequences. Let us stop and note the devotion of earnest study and labor that has characterized not a few of our fellows of late. A devotion that is equal to anything that can be shown in any other division of labor. Can an honest practitioner take into his hand a human tooth and place it beside the results of investigation, as shown by the microscope and published to the world in our journals, I say, can he indifferently toss it aside and deny that it is wonderfully made, or even excite the question, For what is it made?

Where do we in all the works of nature find an architecture that surpasses the tooth? The clergy are beginning to catch the idea that the care of the body is worthy of a more earnest and religious attention. I confess that at this point daily experience places me between the sublime and ridiculous, for there comes to me such conceptions of the devotion to this organ, we call only a tooth, that to give expression to the higher thought, we are exposed to the charge of being a crank; and if we fall to the plane of the common thought, we view ourselves as "Cheap Johns."

Who can measure the distance between an archangel and a swamp angel? Eor here we find the approximate status of a general practitioner—his schedule of professional fees; and from this standpoint we argue that each will fix his estimate according to the altitude of the plane on which he pursues his line of thought in daily practice. The practitioner who does his best to-day and aspires to something higher to-morrow, does not receive the fullest reward for his hire in the finance. Although it has been announced often in our gatherings by a few that there is a fee far above money, and in return has met the snickerings of those who see nothing, but through the dollar atmosphere, yet it stands as a verity.

Here is the moral, here is the fixed gulf that can only be closed by time. We are working out the problem of the two natures, the seen and the unseen,—the selfish and the unselfish. And there can be no equable adjustment of the two extremes, but by applying the standard of charity, or to use a more popular term, justice.

The more one rises into the altitude of the best gifts, because his acquired tastes and enjoyments are there, the more surely he will find his real reward, and one that cannot be wrested from from him, *i. e.*, the satisfaction of having been useful to his fellows. Recognizing as I do that this question is like all others that deal with principles, we can only hope for, or expect progress by development. Therefore it must necessarily be left as a matter of time, and meanwhile all aspiring ones must be patient to work, wait, and watch—yes, even be spent, if need be, in becoming a contributor to those that may come after. "Well," I hear the practical man say, with a smile of derision, "is there no practical ground we can stand on?" If I could in a few words photograph the many methods of arranging for compensation thirty-five years ago, it would not only amuse the present day young practitioner, but it would exhibit to all some development towards a better adjustment. For instance, who extracts an indefinite number of teeth for naught and lends a temporary set of artificial ones to replace them for a given time—about a year—in expectation of getting the permanent ones to make from which he is to secure his fee? Who, as an every day practice, is filling teeth temporarily, expecting to make his fee on the permanent work? Who bestows hours of labor on the necessary surgical and medicinal treatment of the mouth and teeth and makes no charge? This was formerly common practice, and all work was guaranteed and so announced on cards and other mediums of advertising. We can verify this statement for we in some degree commenced practice on this plan, only copying our neighbors. This is a sufficient detail of former practice, and if there are those who resort to this form of practice now, the ready can easily place them. The statement of these facts is a reminder of the pit from which we have been dug, and which points to the former stigma, "Nothing but a dentist." Too much of the tinker atmosphere still clings and is indelibly stamped on not a few of the fee-bills. We do see to-day on the bills of ex-professors and professors, "Cleaning teeth, $1.00; one wedge, 50 cents; medicating the tooth, 25 cents; 3 clasps on a plate, $10.00 each; four teeth on the same plate, $10.00 each," together with various charges in the same style, making in all the liberal amount of $260. We give it more for the kind of itemizing it exhibits. Many practitioners still continue to itemize the number of fillings and nothing else enters into the estimate of the account. A few give a bill for time only at prices varying from two to twenty-five dollars an hour. A few, and only a few, give a bill pure and simple for professional services. This latter method, to our mind, is more in keeping with the advanced thought, for it can be made to include all that enters into the estimate of service. This form of bill does not necessarily prohibit the keeping of a detailed record. We keep an abbreviated written record of our practice in a book prepared especially for this purpose, called a "Book of Records." From this we can at any time refresh our minds. For the benefit of the patient, we are employing in some cases, the new and very excellent chart lately devised by Dr. Chas. F. Allen, of Newburg, N. Y. We have never seen anything so excellent. It gives a fuller and larger portraiture of all the external surfaces of the teeth than anything we have seen. It is more largely intended by the author as a record of examinations. We have not kept a diagram record of fillings for many years, yet we know that many, perhaps the larger proportion, do. We claim that we have a more intelligent record of each case before our minds by the written-out, abbreviated method, and it is our habit to estimate at the time the value of the service which we place in the finance column of the Record. We are sure that there is no fitter time for making a just estimate of services rendered than at the end of the patient's appointment, or at the close of office hours. What to charge is the *bête noir*. Let us talk the subject over from an every day standpoint.

Say we have had six patients and the same number of office hours. We will divide them thus: One is a millionaire, has a bad case, and one that will consume at least twenty or thirty hours, more or less, of our best and most earnest effort to put the mouth in the condition that will at all satisfy our conscience; by this we mean, being just to both the patient and ourselves. The practitioner is the only one that can have an intelligent judgment of the value of the service. Our second patient is of moderate means. The others may be of a middle class, or they may not have much to be done that requires our attention. Of the latter class, one may be in real suffering, the result of the neglect or ignorance of either the patient or practitioner. At all events, your heart aches at the sight of the distressing conditions, which call for all the ability your possess to master the case, and there comes out in the course of the operation an intimation that there is little or no money, for they have wasted their means by paying the one that has assumed the knowledge that he had not. But the patient appeals to you for your service, you having been highly commended, etc. Practitioners who most possess real ability, are, I believe, most philanthropic.

Now I ask, who ought to pay the larger proportion of this one's bill? We reason in this wise, as a true principle of equity, the millionaire should make a liberal contribution towards it, and in this way, by paying your maximum fee; by this we are not advocating what we hear so often, "When I get hold of such and such an one, I'll flax him." Such is not the spirit of an honest man. It is just this class of men who cry "robber" when they hear of fees above their estimate, and are zealous in crying down those who make them, but who are their superiors? I have gone far enough with this subject to come to a conclusion in this wise. A truly professional bill cannot be founded on a commercial basis; neither can there be any system of charges because of the degrees of ability; nor can it be made arbitrary because the service is a humanitarian one. So I am forced to say that because of the principle that underlies a humanitarian calling, we are, on assuming its responsibilities, made morally bound to serve all those who call for our aid, or advise them in a way that they may find the help that their bodily condition demands. Every practitioner must be left to his own judgment. It is not a matter which can be settled by a collective body. The more earnest, sincere and intelligent the practitioner is, the less liable will he be to err on the wrong side. It is surprising to note the difference of professional demeanor between ourselves and the professions of law and medicine. If we, in our calling, have not arrived at an elevation that secures the recognition of public opinion so that we can maintain our rights, as do the above-named callings, then let us, at least, be just to those who show advanced ability. We cannot do too much by word and deed to sustain those who are bearing the burden which lies so heavily because of ignorance. There is no way that the scale of appreciative fees can be better raised than by a high grade of ability, persistently kept before the minds of those who seek our services. There is such an utter lack of sincerity, even by many who have the largest hold of the public confidence, that the task is necessarily made tedious. Therefore, as we have put our hands to the plow, we are forced to accept the situation and hold on to the inspiration that has fathered on mothered us from the beginning of our professional life, and resolve that by the courage of our convictions, we will spend and be spent in giving our energies, regardless of price in dollars and cents, and will husband the growth of the seed which we have sowed beside all waters. Perchance, we may be considered worthy in the end of having our greatness measured by our sincerity, for this will, in fact, be our largest reward.

A SINGULAR CASE.

BY E. H. RAFFENSPERGER, D.D.S., MARION, O.

Several days ago a young man, a stranger, called to get relief from the pain caused by a superior bicuspid, which had been filled and was now threatening to "ulcerate." As the man was in a hurry and only wanted some preparation applied to the gum to produce counter irritation, I applied a little tincture iodine on a pledget of cotton (which had been placed in ammonia for the purpose of discoloring the iodine) to the gum, taking care to protect the mouth with a napkin, but in spite of my precaution a minute quantity of the drug touched the mucous membrane just inside the corner of the mouth, it did not give any trouble at the time, but in course of half an hour the patient returned with a large swelling fully the size of a walnut at the angle of the mouth. The patient was greatly alarmed, the swelling appeared like a large "water blister," and when I punctured it a quantity of *air* escaped, nothing else. The swelling immediately disappeared and in a moment could see no trace of it. The man promised to write me if anything occurred, but as I have not heard anything suppose that was the end of it. Perhaps some of the readers of the Journal can explain.

HYGIENE OF THE MOUTH.*

BY J. F. DOUGHERTY, D.D.S., CANTON, O.

There is probably nothing in the whole range of causes, which exerts a greater influence on dentistry, than the neglect on the part of the mass of mankind, of the proper care of the teeth and mouth.

It is a surprising and shameful fact that among all grades of society there exists a woeful ignorance and culpable indifference as regards the care of the teeth.

In quite a large percentage of the sufferers from deranged stomachs, neuralgia, nervous irritability, or kindred affections, the whole truth is traceable to a neglected condition of the teeth; those organs perhaps being almost entirely hidden, and in many instances several teeth bridged over and cemented together by a thick accumulation of tartar, with a plentiful admixture of mucus, and animal and vegetable ailments, all in a state of decomposition and sending off an odor, which together with that peculiar fetor emitted by the highly congested and bleeding gums, which necessarily accompanies this condition, is sufficient to produce a breath that would do credit to a vulture that has been attending strictly to business.

Doubtless many of us are acquainted with individuals who are enthusiasts on the subject of a pure breathing medium, and who pay a great deal of attention to ventilation and sanitation generally, who at the same time are carrying about with them mouths in just such a condition as I have described, and with every inhalation take into their lungs an atmosphere as polluted as might be found in the most unsanitary habitation.

And with every ingestion of food carry into their stomachs putrefying substances dislodged from this cesspool of corruption there to continue their work of destruction.

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* Read before the Northern Ohio Dental Association, held at Oberlin, May, 1891.

That organs having close relationship and important physiological sympathies with the nutritive and nervous system, should, when in badly diseased condition, cause trouble in other parts, would be but a natural consequence.

It is an established medical observation that diseases of the mouth and associate parts will often cause severe morbid action in other parts of the body.

This is often the case where teeth are badly decayed and extensive accumulations of tartar have caused marked absorption of the alveolus, loosening of the teeth and general breaking up of the dental arch.

In such cases we need not be surprised to find the whole tract of the fifth pair of nerves the seat of functional derangement. And the baneful influence which such a state of things is likely to exert on the general constitution, can be appreciated only after careful consideration.

Medical men of to-day are beginning to appreciate as they never did before the very intimate relations existing between the teeth and the entire physical organization.

The ill effects following the irritation excited by neglected teeth upon the nervous system more especially, and upon the health in general is now so thoroughly recognized by every intelligent physician, that in a great many instances when called to examine a patient the condition of the teeth is enquired into as a possible cause of disease.

If, then, a neglected condition of the teeth may be the cause of so much distress and ill health, aside from the immediate and direct discomfort, how important it is that this subject be given more attention by the dental profession than it seems to have heretofore received.

The members of our profession are supposed to be quite well informed on this and kindred subjects, and to be able when called upon to instruct their patients as to the best means of maintaining perfect cleanliness of the mouth.

But alas! how many there are that impart this instruction only when it is drawn out of them by the enquiries of some earnest seeker after the truest and best means of saving their teeth; and then it is given perhaps in a careless and apathetic manner as if it occupied a very subordinate place and was scarcely worthy of serious consideration; satisfying themselves by stopping the ravages of decay by means of fillings, or substituting artificial teeth of one kind or another for the lost organs, never seeming to realize the truthfulness of the old adage, that "an ounce of prevention is worth a pound of cure" to the patient. To the dentist the cure is worth a great deal more than the prevention, hence too many of us dispense cure only, to the total exclusion of prevention.

This is a subject that receives too little attention and is treated too lightly by a great many members of our profession. This is not because its importance is not realized by every intelligent dentist, but because the initiatory step in bringing about a sanitary condition in some mouths is a very disagreeable operation and sometimes the conditions are such as to make it positively disgusting.

But however disagreeable it may be it is our duty to wade in. And when the task is finished it becomes our duty also to charge a fee commensurate to the disagreeableness of the operation.

This will have the good effect of impressing upon the minds of our patients the great importance of the operation, and stimulate them in their efforts to prevent the necessity of a frequent repetition of it.

A good fee would also have the tendency to spur us on to greater efforts in this good work. The lack of proper remuneration is too often the cause of indifference to this branch of our calling.

To bring about a sanitary condition of the mouth any diseased roots which cannot be restored to a healthy condition and made suitable for carrying a crown should be extracted.

All deposits of tartar and other accumulations removed, all cavities filled, and the gums restored to a healthy condition by proper treatment. Even then the mouth cannot be said to be in a sanitary condition unless the stomach be in a healthy state and performing its functions properly. For, with acid eructations from this organ, there is present in the mouth that enemy to sound teeth.

In dealing then with our patients on this subject it should be firmly impressed upon their minds that the integrity of the teeth depends very materially upon the healthy functions of the stomach ; for the habitually faulty performance of the digestive process causes the dissolution of the teeth through acid reactions, as well as inducing a deterioration in their structure, from not receiving sufficient nutriment from a circulating medium rendered too poor in its nutrient elements, through dyspeptic tendencies.

A short talk to our patients on dental hygiene in general is scarcely ever ill-timed and is a subject that needs no formal introduction. We might mention the influence that diet exerts on the textures and point out the fact that certain kinds of food produce certain effects on the structures, hence the importance of a judicious choice in the articles of diet.

They should be told of the pernicious effect of certain drugs on the teeth and advised as to the proper precautions to be taken in the use of them. This is a matter to which physicians give too little attention.

The injurious effects of certain articles dispensed by street fakirs and other frauds of like character, for cleaning and whitening the teeth should be warned against. They should be taught that the decomposition of particles of food lodged between and about the teeth, forms an acid which very readily acts upon their earthy constituents and causes their early breaking down, and that in perfect cleanliness lies one of the principal means of preventing their destruction.

For this purpose nothing has ever been devised that can take the place of the tooth brush.

In selecting a brush one should be chosen of medium stiffness, not too thickly set with bristles, which are of an unequal length. With a brush of this kind, the bristles will more readily find their way between the teeth and into all the fissures just where they are most needed. The brush should be used principally in the direction of the long axis of the teeth, forcing the bristles well between the teeth and drawn toward the grinding surface. This should be done on the inside as well as on the outside of the arch. The molars and especially the third should be given particular attention.

The failure to properly clean these teeth has undoubtedly much to do with the popular notion that the wisdom teeth are not worth the efforts necessary to save them.

After meals the toothpick should be used to dislodge the coarser particles of food that have become wedged between the teeth in the masticating process. As to the kind of toothpick to be used, I would recommend either the quill or wooden article. But under no circumstances metal.

Care should be exercised in the use of the toothpick to not unduly irritate or wound the gums. Considerable harm has sometimes been done in this way.

A danger, too, in the use of the wooden toothpick is the breaking off of the end between the roots of two teeth in close apposition. Its presence there for sometime may produce pericementitis and the eventual loss of the tooth. Such a case as this came under my observation not long since. The loss of a sound molar was the result.

After the toothpick should come the use of the brush as described above with tepid water. This to be followed by the use of floss silk, drawing it carefully between the teeth and over the entire proximal surface of each tooth; carrying it slightly under the free margin of the gums, all the while keeping up a sawing motion, thereby to dislodge and carry from between the teeth any small particles of food that may have escaped the toothpick and brush. Finally, rinse the mouth well with tepid water. Either the pure article or some aromatic water. The latter is much used by the French and English, and is a habit that might with profit be imitated by their American cousins.

This cleansing process just described should be followed after eating, if that be a dozen times a day.

On arising in the morning brushing will suffice, but before retiring this might be supplemented by the rubbing of prepared chalk.

Would recommend the moderate use of dentifrices. Think harm is sometimes done by the immoderate use of preparations containing too much grit, together with unduly hard and improper brushing.

I have not hoped in the writing of this paper to advance any new thoughts, but simply to open a subject which through discussion may awaken in us a deeper interest in it and we thereby be brought to a fuller realization of our duties to our patients.

DR. W. H. ATKINSON.

THE following is part of a paper entitled "As we go marching on," by J. F. Siddall, Oberlin, Ohio, read at the 32d Annual Meeting of the Northern Ohio Dental Association, of which Dr. Atkinson was a charter member.

It remains for me to say a few words, in closing this paper, about the most honored member of our Association. I first met Wm. H. Atkinson in the Autumn of '57, or the Spring of '58, at a Dental Convention in Cleveland; then, again, I met him in a National Convention at Cincinnati, the following August, and I have remembered to this day more of Dr. Atkinson's appearance and things he said and did at that meeting than of any one else.

He seemed to be a stranger and would have taken but little part if his striking appearance and manner had not attracted attention, as always was the case with Dr. Atkinson. After those meetings he always remembered me, and seeing that I was anxious to learn, time and again extended the utmost cordiality, never failing to ask me "to come and look on."

Never in my life was I more thankful than for those opportunities. One incident I will relate that occurred years after, at a meeting of the State Society: A very delicate young woman was brought into our meeting with a large tumor in her mouth. She was seated in the center of a large circle of dentists who gathered about her.

Dr. Atkinson very carefully and rapidly made an examination of the case, and before he began his report to us dentists, he placed his hand gently on the head of the poor girl, who was a terrible looking object, and in a low tone of voice that I was close enough to hear, in a few simple words explained first to her the case, and assured her that Dr. Hamilton or any other good surgeon could with no difficulty whatever entirely remove the tumor, and that there was nothing to fear. The poor deformed sufferer who for a long time had been too shocking a sight to show her face even to her friends now animated with a new born hope and a beseeching look, together with the noble figure of Dr. Atkinson as he stood by her side, addressing the Society, with his hand still lovingly resting on her head like a tender father's, made a picture in my mind never to be forgotten.

The first thing I thought of when I heard of Dr. Atkinson's death was that scene, and the words of our Saviour, "Inasmuch as ye did it unto one of the least of these, ye did it unto me." How I wish our friend Dr. Barnes could have been there with his "Kodak," and could have given us that picture. It would have made a model indeed for an artist. This was but one, no doubt, of a great many incidents in the life of the good man where his skill or his counsel was so faithfully and lovingly bestowed as to be to the world a good representation of the Great Physician in his matchless power that never was withheld where there was human woe or want to relieve.

Dr. Atkinson also knew the blessedness of giving. How often have we heard him say, "Freely ye have received, freely give." With him it was give, give, give; his time, his thought, by day and by night, and with it went always his love, but last and least of all in his estimation often went his bottom dollar. This he gave so easily and so often that it was no trick at all.

The real value of such a life as that of Dr. Wm. H. Atkinson's to this association cannot be estimated, to say nothing of what his life has been worth to other societies and to the profession at large. I once heard it remarked that Atkinson had impressed himself on the dental profession of the entire world as no other man that lived had done. This may be true or it may not.

We shall never be able to estimate the value of such a power as this man has been in our profession. We shall look in vain now for his remarks, so unlike any other man's, in the reports of society proceedings in our journals. His noble presence, an inspiration wherever seen, we shall behold no more. That manly form has gone, but who for a moment doubts that his noble "soul goes marching on" and shall not we who knew him, or knew of him, or have in any way been influenced by his teaching, and his life, all be the stronger for Atkinson's having lived, and for his still living; and should not we, here and hereafter, with a firmer step and a brighter hope take courage "as we go marching on."

THE THIRTY-FIRST ANNUAL MEETING OF THE AMERICAN DENTAL ASSOCIATION.

SARATOGA SPRINGS, N. Y., AUGUST 4, 1891.

Reported by N. S. HOFF, D. D. S., Ann Arbor, Mich.

THE meeting was called to order at 10:15 A.M. in the City Hall council room, by president A. W. Harlan. All the officers, except E. T. Darby and S. G. Perry of the executive committee, were present and in their places.

The usual preliminary reading of minutes, roll call, etc., were duly disposed of, also the Secretary, Treasurer and Executive Committee reports.

At the session last year a committee was appointed to confer with the authorities at Washington and urge the appointment of Dental Surgeons to the Army and Navy. This committee reported a conference with the Surgeon General and read a communication from him to the effect that, owing to the peaceful times and almost complete abolishment of frontier life, there was no need of an army dental surgeon as the troops were located in towns and cities where such services could be secured readily, and that the small numbers of the troops that were out of the reach of such services were continually on the march, so it would be impracticable to appoint a dental surgeon for them. Further, the expense to the army and opportunity for extravagance and abuse of the privilege would more than counterbalance any desirable end that might be sought by such appointments. The committee therefore desired to submit an unfavorable report, which was accepted.

The committee on dental legislation made a report, and urged as a solution of the differences between college faculties and State examining boards, that a committee should be appointed from each State board where a college was located, to assist at the examination of candidates for graduation in connection with the college faculty, and such examination and indorsement was to be accepted as final in any State. The report was accepted, but no further recommendation or action taken, as many could not endorse the wisdom of such a proceeding.

The committee appointed to assist the New Hampshire dentist in defending their State law, reported that the supreme court had decided that the law was unconstitutional, in that it made personal distinctions merely on the ground of residence. The committee reported that they had nothing to do as the dentist of New Hampshire had wisely decided to drop all further contest and concentrate their efforts to secure a new and better law.

President A. W. Harlan then read his annual address, in which he spoke feelingly of the death of Dr. Wm. H. Atkinson the first president of the association; Dr. Edward Maynard the well known inventor dentist, and the one who perfected the noncohesive gold filling system; and Dr. J. W. White president of the S. S. White Dental Manufacturing Co., and the successful and respected editor of the *Dental Cosmos.*

The president advised the abolishment of all standing committees, transferring the miscellaneous business matters of the association to an annually elected business board or executive committee; the idea being to secure the full and uninterrupted time of the meeting for the reading and discussion of scientific papers.

Advised that the officers of the sections be changed oftener in order that more variety and possibly improvement in the quality of work done might be secured.

Advised such change of the constitution as would allow the Association or executive committee by majority vote to change the time and place of meeting, with the idea that if it should at any time seem desirable to hold a meeting in the south, an agreeable season could be selected.

Advised the appointment of committees in suitable localities to assist in the organization of local societies in new States, cities, towns or districts where none now exist. This committee to be supervisory and report to this association.

Congratulated the association on the accomplishment, with so little apparent disturbrnce, of the extended college course of study required for graduation, and the influence it had exerted to bring this to pass.

After reading the President's Address, on motion a committee was appointed to which it was referred, with the request that it make such report for the action of the society as seemed expedient. This committee subsequently reported extended amendments to the constitution embracing not only the ideas advanced by the president, but some other seemingly desirable amendments, which under the rules will lie over until next year for action.

Evening Session.

Section VI.—Physiology and etiology was called and Dr. H. A. Smith reported as chairman. In continuation of the report from last year, the work of the committee had established the fact that implantation was successful for from three to five years. No person so far as known has been inoculated with disease through the practice of implantation. No operation for restoration of lost dental organs is so æsthetic or useful, and for these reasons it is to be commended even though its existence be as brief as three years. The success of implantation in connection with antiseptic agents has revived interest in the subject of transplantation; and a combination of implanting and transplanting will often enable the skillful practitioner to utilize the socket of a tooth lost from pyorrhœa alveolaris or other cause.

In conclusion the committee beg to report that the profession is justified in performing this operation in suitable cases, inasmuch as the chances of success are favorable when a healthy tooth is implanted and the operation skillfully made.

Dr. Patrick to whom the work of examining the prehistoric crania of the country had been intrusted by this section, reported that 2096 skulls have been examined, but the reports came in too late for classification for this meeting. The crania at Harvard were examined by Dr. Andrews, at Philadelphia by Dr. Peirce, at St. Louis by Drs. McKellops and Fuller, at Chicago by Drs. Ottofy and Davis. Other collections were being examined in various parts of the country. Some valuable collections could not be examined except by the curators of the museums where they are located, and as this would involve expense a request was made for more money to carry on this work. At a subsequent meeting five hundred dollars ($500) was voted in addition to a similar amount voted last year. Dr. Patrick exhibited the blank forms used with the directions for taking the measurements and requested that any one living near a collection should send to him for the blanks and make the examinations. He also exhibited some of the charts filled in with the data obtained from examinations already held.

Dr. Eugene S. Talbot read a paper entitled, "Mouth breathing not the cause of contracted jaws and high vaults."

Mouth breathing was unknown among the earlier races and is not observed among the present uncivilized races. Dr. Delavan (see *International Dental Journal*, January, 1891) thinks mouth breathing compels the constant dropping of the lower jaw, producing by the stretching of the muscles a lateral pressure on the bones of the face which results in crushing or compressing them. Others authors attribute the compression to the tension put upon the buccinator muscle alone. Dr. Talbot described the anatomical peculiarities of the bones of the face at considerable length in regard to their construction to resist force, etc., at too great length for our abstract. The hard palate does not assume the normal shape until the 12th year or after the teeth assume their positions in the arch. And by measurements made on a large number of skulls and models (over 6000), the height of the vault measured from a line drawn across it between the second bicuspid and first molars at the margin of the alveolar process, varies from one-fourth of an inch (the lowest) to one inch, the highest observed. The alveolar process is developed for the support of the teeth and it conforms to the positions taken by the teeth, while the maxilla is not appreciably disturbed by any abnormal positions taken by the teeth. Many cases of contracted arches were observed unaccompanied by mouth breathing. On the contrary in cases of mouth breathers he observed many normal arches. Mouth breathing often begins early in life, but contracted arches seldom occur until the seventh to the tenth year. These contracted arches always assume the V-shape, saddle-shape, or a modification of one or the other, or the two.

There are more contracted jaws among the low than the high vaults, but the deformity in the high vault is more marked. In the V-shaped arch the contraction begins at the first molar and extends to the incisors, projecting the process. While in the saddle-shaped the bicuspids alone are crowded inward and there is no projection of the process or incisors. The contracted hard palate is also associated with the V-shaped and never with the saddle-shaped deformity. The high vault is never seen in the deciduous set of teeth.

The buccinator muscle is used for blowing and keeping food under the teeth when eating, and during sleep there can be no tension on this muscle. As this muscle in its attachment only extends as far forward as the first bicuspid it could not possibly be a factor in producing the V-shaped arch; neither could the orbicularis oris, as the action of this muscle would be to drive the incisors inward and backward directly antagonizing any possible tendency of the buccinator to do this. The roots of the teeth have nothing to do with determining the position of the teeth or the shape of the arch as they are developed largely after the tooth has taken its position in the arch. If the muscles were active in producing the deformity it would be uniform on both sides of the mouth, but such is not generally the case. The muscular action is not sufficient to bend the hard palate by any pressure made upon the teeth. But there is no bending of the bones; the process is one of absorption and deposition, and besides the muscular power of the tongue is sufficient to counteract the muscular power of the facial muscles. Partial irregularities preclude the muscular cause. In most cases the cause of the deformity is the arrest of development of the maxillary bones, due to hereditary influences or disease. An examination of 4614 cases gives an average height of the arch of 0.58 of an inch. In the saddle-shaped arch the average height was 0.60 of an inch. In the V-shaped arch the average height was 0.55 of an inch. In the semi-V-shaped arch the average height was 0.56 of an inch. The height of the vault seems to depend upon the shape of the cranium, or have a uniform relation to it. The impression that the vault of contracted arches is higher than the normal is erroneous.

The author of the paper exhibited models of twenty-four mouth breathers, from one to twenty-four years of age, none of which showed any special tendency toward contracted arches or high vaults.

DISCUSSION.

Dr. Friederichs does not think an examination of even six thousand cases sufficient to establish a typical arch.

Dr. Frank Abbott would congratulate Dr. Talbot and thought he had satisfactorily established the fact that mouth breathing does not produce the V-shaped or saddle-shaped arches.

Dr. Fillebrown agreed with the essayist in the statement that the buccinator muscles could not be important factors in producing this deformity since there was considerable space between the teeth and the muscles when the lower jaw was dropped to its utmost.

Dr. Horton was surprised to learn that mouth breathing was confined to the civilized races and he would like more information on this subject.

Dr. Watkins would like to know if mouth breathing after the eruption of the teeth would cause the contracted vault. Dr. Talbot said he had never seen the V-shaped arch in the jaws of children.

Dr. Peirce: Mouth breathing has not been generally given as the cause of contracted arches. The reason why there is no V-shaped arch in children is that the child's jaw is developed largely before it is born, and when there can be no mechanical pressure exerted to malform it. If the malformation is produced between the ages of eight and twelve years, that is the time when the permanent bicuspids and cuspids are taking their places in the arch and the contracted arches could easily be produced by the muscular pressure brought to bear upon them by the labial and facial muscles.

Dr. Morgan: It is uncommon to find among the negroes high vaults or contracted arches or irregularities of the teeth, an indication that the malady may predominate among highly civilized people.

Dr. Truman would like to know why the permanent bicuspids are thrown in by the activity of the muscles and the deciduous molars are not.

Dr. Peirce thought that was due to the fact that the crowns of the temporary teeth had developed so far and taken their normal positions in the arch that the action of the muscles in the child were not sufficient to produce the contraction, especially as the alveolar process begins to develop as soon as the crown is formed and this would resist the action of the muscles.

Dr. Patrick: The measurements given in this paper are worth nothing so far as they have been used to establish a fact. Averages are not scientific, they are tentative, speculative. Every additional measurement will change and destroy the average. Averages are useless. These measurements were not made of any single race or class of people or they might be useful in establishing scientific facts. Averages destroy individuality and prevent classification. Measurements are good, but averages prove nothing. No two individuals are alike, consequently a system of measurements have been useful in identifying criminals, but the adoption of the average system for this purpose would be folly. So it is in this instance.

Dr. Talbot in closing the discussion said that if the muscles were the cause of the contracted arch, the first molar would be likely to be affected, which it never is.

Dr. L. E. Custer read a paper entitled, "The physiology of the action of obtundents."

The dentinal fiber is composed of simple protoplasm, with exalted sensibility. It contains albumen and is coagulable. It contains much water and does not entirely fill the dentinal tube, being surrounded by water. This water can be removed. The temperature can be reduced. There is no blood circulation, consequently anodynes introduced systemically cannot produce an effect rapidly. The successful agent for obtunding sensitive dentine, must not be a coagulant, must have an affinity for water, and a penetrative property exceeding the ordinary nutritive process. Change of structure is most easily and readily accomplished by coagulants. Extreme heat is capable of coagulating the fiber deeply. Penetrating escharotics, because their activity cannot be limited are dangerous as they endanger the life of the pulp. Desiccation, by extracting the water from the tubuli of the dentine around the fiber and from the fiber itself as well, will destroy the function temporarily and consequently produce insensibility. The watery contents of the dentine is extracted by evaporation, and in this condition the application to the dentinal fiber of an agent having a strong affinity for water will extract its watery constituent. Many agents are used for this purpose, but absolute alcohol is the most acceptable and a representative. The water of the dentine is easily extracted, but the molecularly held water of the fiber is more difficult to abstract, hence the difficulty experienced in efforts to obtund sensitive dentine. Evaporation and affinity are the two great factors in dehydration. Complete insensibility is more easily obtained by dehydration than by coagulation, but the most profound effects are to be had by a combination of the two methods. In addition to dehydration, chloride of zinc, as a representative coagulant, is used to produce profound impressions. This method must necessarily be exceedingly painful. Change of temperature is another popular method of producing insensibility. Lowering of temperature will produce a corresponding lower neural activity until complete insensibility will have been obtained. Refrigeration is a more practical method of anæsthesia than the chemical methods. Volatile agents are used to produce refrigerating anæsthesia, such as sulphuric ether, chloride of methyl, rhigholene, nitrous oxide, etc. These agents do not dehydrate but lower temperature. Owing to the fact that sufficient dehydration or coagulation cannot be had to obtain insensibility without endangering the life of the pulp, the most practical and safe method of obtunding sensitive dentine is by refrigeration.

The application of vaporizable agents in a warm or hot blast are essentially methods of desiccation. The heat being the only virtuous agent unless the medicament have an affinity for water. Alcohol in this connection is valuable because of its affinity for water, but the volatile oils have no such affinity and consequently little or no value.

There was no discussion of Dr. Custer's paper.

By suspension of the regular order of business, Dr. Corydon Palmer had hung upon the wall an excellent oil painting of Dr. W. H. Atkinson, which he uncovered and in a brief speech presented it to the association.

(To be continued.)

DENTAL SECTION OF THE AMERICAN MEDICAL ASSOCIATION.*

Reported for the OHIO JOURNAL..

THE American Medical Association held its forty-second annual meeting in Washington, D. C., May 5, 6, 7 and 8, 1891.

The section of Dental and Oral Surgery was called to order by the chairman, Dr. E. S. Talbot, of Illinois. In absence of the secretary Dr. H. W. Morgan, Dr. L. E. Custer, of Ohio, was elected secretary *pro tem.*

There being no minutes or miscellaneous business, Dr. J. L. Williams was called to the chair and Dr. Talbot delivered his

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* On account of accumulated material that had to appear, we were unable to present this report to our readers any earlier.—ED.

ANNUAL ADDRESS,

of which we give an abstract.

Dentistry from the earliest period up to the present time has been practised by medically educated men. Hippocrates, B. C. 460, speaks of dentifrices and the fixing of the teeth. Celsus, at the end of the first century, Ætius, in the sixth, Egenolff and Ambrose Paré, in the fourteenth, all mention certain forms of treatment of the teeth. John Hunter (1728) spent much of his time in the study and treatment of the teeth, as well as the study of general anatomy. Fouchard, 1747, Bourdet, 1786, Fox, 1814, Catalan, 1826, all practised dentistry, and also wrote extensively on dental subjects.

The instruments for dental as well as surgical purposes, which are to be seen in the museums of Europe, tagether with the beautiful specimens of Etruscan and Phœnician dentistry, now in the possession of Drs. Van Marter, of Rome, Barrett, of Buffalo, and Taft, of Cincinnati, and which are similar to those made to-day, are striking illustrations of the superior ability which men of early times acquired.

About 1826–30 the practice of dentistry was not wholly in the hands of an enviable class of individuals. Many were watchmakers, barbers, and tinkers of various descriptions, who had taken up the practice for the money that was in it, and were roaming about the country extracting teeth and inserting artificial ones, regardless of honor and ability.

There were, however, a few medical men practising dentistry who had obtained a high standing in their chosen profession, and who were anxious to hold their special calling upon an equal footing with other branches of the healing art. Among those, whose names stand out conspicuously in the history of this country are, Parmly, Brown, Hayden, Tucker, Hudson, Greenwood, Maynard, Trenon, Harwood, Chapin A. Harris, and Keep.

It was not until 1839 that any movement was made on the part of these men to elevate their specialty from the slum in which a majority of the so-called practitioners were holding it.

The *American Journal of Dental Science* made its first appearance, with Dr. Chapin A. Harris and Eleazer Parmly as its editors. The American Society of Dental Surgery was organized in 1840. In connection with these movements, it was the ambition of Dr. Harris to organize a dental school in unison with the Medical Department of the University of Maryland. The practice of dentistry, with few exceptions, being at a very low ebb, did not impress the Faculty of the University as being of sufficient importance to be considered a part of the healing art. The request of Dr. Harris was therefore rejected. The rejection of this proposition gave Dr. Harris new energy, and, as a result, the Baltimore College of Dental Surgery was established.

Whether the establishment of a strictly dental school, together with the conferring of a separate degree from that of the medical school, has benefited dentistry it is difficult to say.

The original idea of Dr. Harris, if it could have been successfully carried out, would, no doubt, have placed dentistry as a calling upon a higher plane than it occupies at the present time. His idea was that, by this union, the Dental Department, being a legitimate specialty of medicine, would thus draw support from the medical profession at large. Be that as it may, dentistry, forced upon its career with a new degree, had, with very little aid from the medical profession, to work its own way as best it could. This incident marked one of the greatest epochs in the history of our calling.

The Baltimore College, owing to the talent of unexceptionably able men, flourished, and men of ability were graduated, who practised dentistry in different parts of the country, with the new degree of "Doctor of Dental Surgery." So successful was this college that other schools of dentistry were organized shortly afterwards, and these in their turn became as successful as the mother school.

From the first, graduates of dentistry, who were ambitious to excel, have never been satisfied with a dental degree only, and many men, anxious to acquire higher attainments, have taken the medical degree also.

The first dental college to unite with a medical college was the St. Louis College. The St. Louis Dental College was founded in 1866, and the first aneouncement stated that the students will have the benefit of all lectures in anatomy, chemistry, physiology, and materia medica, that are given to the matriculants of the St. Louis Medical College, the first college to take the step in this direction.

Following this, in 1867, the Harvard Dental School was organized in connection with the Harvard University; since that date, most of the universities in this country have established dental departments. The older dental colleges are uniting themselves as rapidly as possible to universities, so that at the present time nearly one-half of the dental colleges are departments in the different universities. Ever since the formation of the Massachusetts Medical Society, in 1781, it has had members practising dentistry. In Massachusetts, forty or fifty years ago, no reputable dentist would take a pupil unless he would engage to take a full medical course, or had already graduated in medicine.

Although dentistry apparently seceded from the mother profession in 1840, it was so near akin to it that, with few exceptions, there has been a yearning on the part of the dental graduates to return to the parental roof. Many graduates of dentistry have availed themselves of the opportunity, and the numbers are increasing every year.

With the convening of this meeting, the Section of Dental and Oral Surgery in the American Medical Association enters upon the tenth year of its existence. At the session of the American Medical Association, held in Richmond, Va., 1881, Drs. W. W. Allport, J. W. Brophy, E. S. Talbot, Chicago; Dr. J. L. Williams, Boston; Dr. G. L. Goodwillie, New York; Dr. Hauxhurst, Grand Rapids, Mich.; and Dr. G. L. Parmalee, Hartford, Conn., and practitioners of dentistry, holding medical degrees, presented themselves as delegates from local medical societies for the purpose of organizing a section on dental and oral surgery. Each gentleman constituted himself a committee of one to champion the movement among the members of the Association who were in attendance. They found no opposition whatever; on the contrary, the oldest members, and especially the ex-presidents of the Association, were heartily in sympathy with the movement, and were anxious to assist in bringing it about. At the morning session, Thusday, May 5, Dr. Samuel D. Gross, of Philadelphia, asked for a suspension of the regular order of business, which motion was granted. He then moved that the by-laws of the Association be so amended as to create another section, to be known as No. 7, entitled Dentistry. The motion was favored by Dr. Sayre, of New York, and Dr. N. S. Davis, of Chicago, and was adopted. According to the constitution and by-laws of the Association, dentistry was officially then recognized by the American Medical Association.

The effect that this movement produced upon the so-called dental profession was, in one respect, magical. Before this period scarcely a meeting of dentists convened without having upon its programme a paper upon the subject of "Is Dentistry a Specialty in Medicine?" Strange as it may seem, many took the ground that it was not, ignoring the fact that it had been practised as such by some within the last forty years; that many of it branches were taught by medically educated men, and also that we were practising on a part of the human body. Since this period scarcely a paper has been written upon this subject. The action taken by the American Medical Association, as well as cases which have been lately decided by the courts, have legally settled the question forever.

The Section of Dental and Oral Surgery is recognized as a part of the whole, and its members exert as much power in promoting the welfare of the body as do the members of other sections.

Since the organization of this body, editors of medical journals have become quite liberal as well as more intelligent in their discussions of dental subjects, and have taken more interest generally in the affairs of dentists; and physicians have accepted invitations to read papers before medical societies. This shows the interest which an interchange of thought is developing by the union of the different branches of the healing art.

Now, medical men as well as dentists know that many lesions of the body are the direct outcome of diseased teeth. In my capacity as a dental teacher in a medical college I have instructed the students for the past eight years that (in my opinion) many of the diseases of the body, such as pneumonia, consumption, typhus and typhoid fever, eruptive fever, suppuration of the throat and tonsils, aphthæ, ulcers, etc., were the outcome of a collection of micro-organisms in the mouth and decay of the teeth. My reasons for this theory were that in many instances in my practice I have observed patients entirely recover from supposed consumption and other bodily ailments after the mouth had been put in a healthy condition.

In view of the fact that able practitioners of dentistry were debarred from becoming members of the American Medical Association, on the ground that they did not belong to some local medical society at a meeting held in Chicago in June, 1887, Dr. Allport conceived the idea of having a resolution passed which should admit as members men of ability who held the D.D.S. degree.

With the assistance of Dr. N. S. Davis, the following resolution was presented and unanimously adopted:

"*Resolved*, That the regular graduates of such dental and oral schools and colleges as require of their students a standard of preliminary or general education, and a term of professional study equal to the best class of the medical colleges of this country, and embrace in their curriculum all the fundamental branches of medicine, differing by substituting practical and clinical instruction in dental and oral medicine and surgery, be recognized as members of the regular profession of medicine, and eligible to membership in this Association on the same conditions and subject to the same regulations as other members."

In the following year, 1888, the Chicago Dental Club, having adopted the code of ethics of the American Medical Association, sent the following members as qualified under the resolution: W. W. Allport, A. E. Baldwin, John Marshall, and E. S. Talbot, and since that year, 1888, the Dental Club has continued to send members to the Association. The adoption of this resolution by the representative society of the country would seem to show that the medical profession had done its full part to recognize *properly educated* dentists as legitimate specialists in the practice of medicine.

Let the dentist be a scientist and not a mediocre and narrow-minded tradesman. Let him select a new mark every day at which to aim his energies and talents, and let that mark be ever ahead and ever on a higher plane.

No discussion followed the reading of this address, and after a committee had been appointed to draft suitable resolutious upon the death of Drs. Maynard and Atkinson, the next paper, that of Dr. A. H. Thompson, Topeka, Kas., was read by Dr. Marshall. We give an abstract of this paper.

THE TEETH OF INVERTEBRATE ANIMALS.

The writer said:

If vertebrate animals present great variations and many extraordinary forms and interesting extremes in the structure of the dental armature, so also do the invertebrate animals, although these are not so well known. To the dental student the teeth of invertebrates are interesting from the comparative stand point, and serve to illustrate the remarkable possibilities of dental variation, and help to a better understanding of the principles of the mechanical evolution of the teeth of animals. In such studies, any knowledge is valuable which may contribute, even remotely, to a better understanding of the important organs which we are called upon to preserve, and thus better prepare us for our chosen work.

Professor Huxley says ("Anatomy of Vertebrates"), "When invertebrate animals are provided with teeth or masticating organs, the latter are either hard productions of the alimentary mucous membrane, or are modified limbs, as opposed to vertebrate animals, which also usually possess hard productions of the alimentary mucous membrane in the form of teeth; but their jaws are ordinarily parts of the walls of the parietes of the head and have nothing to do with the limbs."

The vertebrate jaw is part of the endo-skeleton,—the invertebrate jaw belongs to the exo-skeleton, as do the teeth of all classes of animals, as illustrated by their embryology.

Mr. W. H. Dall says ("American System of Dentistry"), "Almost every large group of organisms below the vertebrates, until we reach the molluscoidæ and lower radiated animals, exhibits in some of its members one form or another of prehensile or masticatory apparatus connected with the alimentary canal. None of these exhibit true homologies with vertebrate teeth, though some of them present remarkable similarity to the latter in external relation. The teeth and jaws of mollusks, the nippers, mandibles, and settæ of worms, are composed to a greater or less extent of chitinoid material."

"In the higher mollusks, such as the snails and others, besides one or more broad pharyngeal jaws, comparable with those in the worms, in the lingual ribbon, admirably adapted for sawing or slicing sea weeds or cutting or boring into hard shells, acting somewhat like a lapidary's wheel; this organ, however, is limited in its action, and in the cuttles, the jaws, which are like a parrot's beak, do the work of tearing add biting the animals serving for food.

"In the crustaceans and insects we have an approach to true jaws, but here they work laterally, not vertically, as in the vertebrates; the mandibles of the articulates are modified feet, and the teeth on their edges are simply irregularities or sharp processes adapting the mandibles for tearing and comminuting food. The numerous teeth lining the crop of crustaceans and insects serve to further comminute the food, keeping the larger particles back till finely crushed."

Professor Bradley says ("Manual of Comparative Anatomy"), "In the Rotifera, the denticles are in the shape of denticulated plates. The Echinodermata have five large teeth placed in the formidable apparatus called 'Aristotle's Lantern.' In the Annulosa, the leech is the only member that possesses teeth, the semilunar plates embedded in the muscular walls of the mouth; but the remaining classes have only mandibles and maxillæ, which are very hard and chitinous. Among the mollusca, the gasteropods possess a strap-like organ, the odontophora, which is studded with teeth. Cephalopods possess horny jaws which move vertically. Some other classes have denticles besides.

"In the annelida so-called teeth occur in many groups, but partake rather of the nature of jaws than teeth. This group comprises most of the worms, as well as the leeches. Their bodies are divided into more or less well-defined, regular segments, and in general the jaws are on the second or buccal segment, or on a proboscis which is itself on the outer edge of this segment, and may be protruded from the mouth to a considerable distance. They are chitinous, most commonly paired, lateral opposite, of almost infinite variety of forms, resembling in a general way the maxillæ of insects, and mimicking, in miniature, hooks, combs, saws, rasps, claws, etc.

"In the leech the mouth is provided with three lenticular jaws, with the projecting edges finely serrated, having a partly rotary motion about a point central to the three. The medicinal leech has two rows of serrations on each jaw.

"Among the crustaceans (lobsters, shrimps, crabs, etc.), the maxillary organs are but modifications of entire limbs translated from the locomotive series and set apart as special mouth-organs. In the higher crustaceans, the anterior part of the stomach is provided with certain masticatory appendages or stomacholiths, often termed teeth, though more analogous to a sort of a calcareous gizzard. These consist of several calcareous pieces, moved by appropriate muscles inserted in the membraneous wall of the stomach, armed with a smooth medium plate and lateral molar-like organs, whose mimetic resemblance to the molar teeth of some forms of mammalia affords a beautiful illustration of the way, through the selective influence of similar functions, analogous structures may be built up in organs which have no homology whatever. Two smaller points, bicuspid in the lobster, tricuspid in the crab, complete the calcareous apparatus.

"Among the echinoderms, the sea-urchin has a remarkable apparatus called 'Aristotle's lantern,' which contains what may be fairly regarded as true teeth. It is very complicated in its arrangement, but in essentials consists of five hard, calcareous, wedge-shaped sockets or alveoli, each containing one porcelainous chisel-shaped tooth. The teeth are, like those of rodents, usually worn more on the inner than on the outer side, and therefore in wearing always preserve a sharp edge. The combination of the teeth and alveoli produces a pentagonal cone, the apex being formed by the coming together of the points of the teeth."

In the snail the number of these teeth is remarkable; twelve thousand to forty thousand have been counted on the saw-like lingual ribbon. It can cut grass or leaves sharply off. As the teeth are worn off the ribbon, it is uncoiled and new teeth are thus brought into use.

"Next comes rachiglossa, having only rachidian teeth, as in the common whelk. The teeth are usually slight and varied, and prettily denticulated on the cutting edge. The next is the tœnioglossa, bent-toothed, including the greater part of the fresh water snails. The ptenoglossa, feather-toothed, are a small group, of which the sealaria is a member. The riphidoglossa, needle-toothed, comprise a large number of sea-snails, and a few operculated land-snails. The last is docoglossa, chevron-toothed, and includes the limpets."

Some snails present a pavement-like form and arrangement of the teeth which are often of a very pretty pattern, or again a mere hardened mass.

We have thus given briefly the outlines of a study of the teeth of invertebrates, merely to indicate the extent of the subject, and to suggest the interest and attractiveness there is in its pursuit to the naturalist; and in addition to this, to suggest that the study of invertebrate odontology has a positive value to the comparative dental anatomist, from a philosophical stand-point.

The teeth of the sea-urchin have true sockets and alveoli, but their arrangement, support, and motion are very different from those of the vertebrates; so that taken altogether the class presents few homologious with vertebrates, or even resemblances to them, and thus affords a variety of illustration that the latter does not supply.

After the reading of the paper Dr. Whitfield said he was much interested in this subject. He had at home a beautiful specimen. The teeth were about ⅜ of an inch long, with a skeleton-like arrangement, like a trap, coming to a point; the teeth work separately and press down of the point.

Dr. Rusk said he had recently seen an interesting specimen. It was an immense tooth with very short roots and the enamel was almost entirely black. It had been sent from the west.

(To be continued.)

Prosthetic Dentistry.

[This department will be devoted exclusively to Prosthetic Dentistry, including Crown and Bridge-Work. We shall be pleased to receive from our readers such practical contributions, short items or queries upon this subject as they choose to contribute.]

QUESTIONS ANSWERED.

BY PROF. L. P. HASKELL, CHICAGO.

An old practitioner in Massachusetts asks of me information upon the following subjects:

1. "As regards *oiled sand*, what is the proportion of oil and sand; what kind of oil?"

2. "To make your lead and tin counter do you stick your Babbitt metal die in the lead and tin while hot and fluid?"

3. "If you used tin for both die and counter what difference would it make which you used first?"

4. "About the 'Chase' plate; I do not see how that is going to prevent the absorption of the alveolar ridge. My idea is that is where metal is needed most. They are good as far as they go, but the part requiring it most is unprovided for. I think its advantages appeal to the eye and imagination most."

5. "I do not remember seeing such mouths before the

advent of rubber, flabby, spongy, no ridge. I regard the trouble brought on by reason mostly of the rubber being a non-conductor."

6. "I think I have the same ideas in common with you in regard to the use of vacuum cavities. I do not discard them entirely, and do not think them ever of any *permanent* advantage, but for the 'd——n fools' we sometimes have, I use them *if the mouth is suitable.*

I think most people and many dentists fail to comprehend the principle, practical working and permanent (or transient) effect of a 'suction,' as they call it. As you know it serves but a temporary advantage at best, and in many mouths the worst possible thing even at first. I think many dentists hardly know why they use them, but as they seem to be of some temporary benefit in some cases, in an unreasoning way use them in all, depending upon the air-cell instead of careful manipulation and judgment. A 'cavity' will not hold a plate against the leverage or force of biting, and at every displacement the air contained in it has to be sucked out; per contra, a perfect fitting plate without, itself exhausting by simple displacement. I seldom put one in for a patient who has learned what teeth will do and not do, by having worn them."

7. "In those cases that seem so much more satisfactory at first, there comes the offset in the course of time, of complaint that their teeth 'have grown loose,' 'do not fit,' 'no suction,' etc., caused by the filling of the cavity with membrane, and though the *fit* is as good the change from the close adhesion felt at first is so great that they want them tightened or made over. Don't we think pretty much alike?"

ANSWERS.

1. Oil to the same consistency as if moistened with water. I use olive oil. Some use sperm oil.

2. No; the counter metal would be *so hot* there would be danger of adhesion. Sink the die into the sand, in the ring in which it was cast, about half way to the margin of cast proper, and place a ring around it; stir the metal until it cools partly and pour.

3. I would not use tin for a die, but when I did years ago, I used a lead counter and cast *that* first by dipping the model into it.

4. The merit of the "Chase" plate is in its being preferable to rubber, when the patient feels they cannot afford an entire gold plate. It is a decided benefit to have a metal palate rather than rubber.

5. You are quite correct in that statement. I have a large collection of models (hundreds) upon which I have made full dentures, and there are but *six* that do not show undue absorption of the process, and most of them largely in that condition.

After an absence of fifteen years from Boston I spent two months there and had opportunity to examine the mouths of many patients for whom I had made continuous-gum or gold plates fifteen to twenty years previous, and in all these cases the gums were in healthy condition and showing no additional absorption. I was surprised at this because I had observed, since the introduction of rubber plates, so many inflamed membranes and undue absorption.

6. Your presentation of the matter of "vacuum cavities" is correct. I make no use of them except occasionally in partial sets. In all of these hundreds of models, even the worst,—flat and no ridge,—there are but three "vacuum cavities," and those were made at the request of the dentists for whom the sets were made.

7. Yes, I think we are fully agreed, both having had an experience of many years anterior to the introduction of rubber plates.

METHOD OF ATTACHING TEETH TO GOLD PLATES BY MEANS OF VULCANITE.

BY J. HALL LEWIS, D.D.S., WASHINGTON, D.C.

I HAVE lately noticed several methods of attaching porcelain teeth to gold plates by means of vulcanite. The following I have practiced for the past ten years with much satisfaction. It is equally good for full or partial cases, upper or lower plates, and works best where other methods are least satisfactory as when the porcelain is almost or quite in contact with the gold.

Take an old automatic plugger-point, shorten it, file "four sided," then bevel from one angle or corner to a sharp point at the opposite corner, harden, and draw the temper to a full yellow.

You then have the ordinary "graver" or "engraver's tool" to fit your automatic mallet. The gold plate being "rimmed" and otherwise ready for the rubber, is placed on the plaster cast and the entire surface of the gold which is to be covered by the aforesaid rubber, is stippled or roughened by means of this "graver" in the mallet, with as heavy a blow as is possible to use without indenting the under surface of the gold. By this means hundreds of little spurs are thrown up from the surface of the gold at various angles to which the rubber attaches itself with remarkable tenacity. Pink rubber should always be used for this purpose, the greater contraction during vulcanization of the other varieties defeating the object desired. If this "stippling" process is thoroughly done, no fear need be entertained of the rubber tearing away from the gold.

A READY METHOD OF REPAIRING THE METALLIC PORTION OF COMBINATION WORK.

After adjusting the broken portion of the denture, flask the case as for vulcanizing, so doing it that the plate and teeth will be in the same section of the flask, leaving in the other a cast of the palatal portion of the plate. So arrange that the sections of flask will separate readily without straining any portion of the plate, and also to permit its removal aud accurate replacement.

After the flask is open, apply to the plate the blow-pipe flame, or by other means sufficient heat to release it from the attachment, and remove it. This should be done cautiously, so as not to destroy, any farther than necessary, the attachment; or, by using too great a force, bend the plate, injure the teeth, or the mold in the flask. We now have the plate free, and in the usual manner may make any desired repairs; bearing in mind, however, to provide for its actual replacement in the flask. To To add to this thickness, a corresponding portion of plaster must be taken from the mold in the flask, so that the plate will again occupy its original position.

The repairs to the metallic portion of the denture having been completed, it is adjusted to that section of the flask having the cast of its palatal surface.

We now proceed, without changing its position, to cut away all portions of the attachment injured by the heat used in removing the plate, farther removing sufficient to allow free space for the staples, pins, etc., on the plate, and to make such undercuts as may be necessary to securely unite the new to the old material. This having been done, we proceed to pack and vulcanize, making sure that the flask is entirely closed. When the case is finished, if proper care has been taken, a narrow line of new material will be the only visible indication of the repair; if a darker shade of rubber has been used, this will be hardly perceptible. The fit of the plate, the articulation and arrangement of the teeth, so often disturbed in remaking, will be unchanged, while the time and labor has been but little more than that required for a similar repair of any ordinary vulcanite case.—Dr. N. H. Keysor, *Items*.

COVERING GOLD CROWNS WITH GLASS.

I would like to present to the society this evening a method for enameling the faces of all gold crowns. We all know how conspicuous gold crowns are in the mouth, which characteristic has always been very objectionable to me, and I have tried various devices for remedying that difficulty. Since the introduction of glass fillings, I have hit on a plan which removes almost entirely the unsightly appearance, and I thought it might be interesting to describe how I did it. After fitting the ordinary gold crown to the root, I remove the crown and fill it with modeling composition, to keep it from bending. Then, with the ordinary jeweler's saw, I cut out the lower part of the buccal surface of the gold crown, commencing at the cutting edge, leaving a ring of gold at the top. I then remove the composition and fit a piece of either thin platina or gold — I prefer the platina — to the inside of the crown, just to the edges of the opening made with the saw. I always thicken the crown at the cusps with solder, using twenty-carat solder, and, holding it over the burner, I solder the little piece of platina at one end, and then add the glass filling of the proper shade. The color depends much on how it is fused; if it is fused too much, it bleaches; if fused too little, the color is not brought out. After wetting the glass with water, I pack it in over the platina, and with some bibulous paper make it as smooth as possible; then I hold it over the alcohol lamp with the pliers. If not plump enough, I repeat the process till I have it contoured to my satisfaction. I have had some of these enameled crowns wearing in the mouth for six months, and there has been no change.

I have tried another way too,—that of grinding very thin pieces of porcelain from English teeth, or even American teeth, fitting them towards the surface, from the inside, and fusing glass around them. That gives the color a little better, but it is more work. Enameling by the first method can be done in ten minutes.—Dr. J. B. Littig, *N. Y. Odont. So.*, *Inter.*

HOW TO GET A TIN CAST.

Get a good plaster model, dry it, dip in melted stearine, and take two or three impressions in molding sand. Pour one of them with tin, wait a few moments, and pour the tin in the sand back into the ladle. A thin coating of tin which has cooled gives a perfect hollow cast. If too much time is allowed the hollow cast will be too thick. A little experience will show how long to wait. With a very thin saw make several cuts from the edge to the center of the ridge. Fill with plaster, and you have a plaster cast coated with tin, and the slits made allow the sections to be bent inward, and the plate will come off. If this last precaution is not taken, you are liable to fracture the plate or check the gum sections in taking off the case. With small partial cases, that come off and on the model easily in the wax, I invest without the model, and finish and fit the case to the model after vulcanizing. Then it goes into its place in the mouth without any filing.

Let me ask some young operator, who swears by a plaster model, to try my way with the next partial plate he has to make. Of course, I do not refer to partial suction cases, as I never make any. Get a perfect impression in modeling compound, making a special tray, if necssary; dry and dip the model; make a wax plate with a strong wire or two imbedded in it; grind in the teeth, at the chair preferably; and see that the wax plate fits the model nicely in every part. Take it off and on two or three times till you feel sure you do not bend it in so doing. Invest without the model, and when it is finished and polished it will fit the model exactly and the mouth as well. If your case ever breaks, or you want to add a tooth, your model is ready. If your patient goes abroad, and breaks the case, you can mend it, and be sure it will fit, if sent by mail; and if some poor old grinder gets loose, and drops out, you can cut the corresponding tooth off the model and add one. It is sure to be right.—CHAS. RATHBUN, *Items*.

THE BREAKING OF PORCELAINS is urged as an objection to this work in bridges. This can be entirely obviated, and without the display of gold often seen on side bridges. After the porcelains have been ground into position and backed up, bevel the cutting edges as much as possible without changing the form, even if it be a cuspid or bicuspid face, and wax carefully on the bevel a piece of crown metal, No. 25 to 27, according to the strain, taking care to keep the wax from the joint, and allowing the metal to extend beyond the tooth, so as to be held firmly in position by the investment when the wax is removed, and while soldering. If the cutting edge of the incisors occlude, flatten and bevel slightly. When finely finished the protection will not be observed, and I have yet to see the first case of breakage in an extensive use of this simple device. In protecting bicuspid and molar faces, the protection must be secured in position before the masticating surfaces are fitted, which should be as near the cutting edge as the occlusion will permit. If properly finished, no gold will show, and the porcelain beveled in this manner is thoroughly protected from strain. Avoid getting wax on the face of the metal, so that the investment may protect it from solder and the porcelain from borax checks, compelling the solder to attach underneath, so that the face will need no finishing, except to grind down the portion beyond the tooth. It will also allow of a high polish for the surface, and there will be no thinning of the protection from careless grinding, as there would be if solder were allowed to flow on the face, and the tendency to discoloration at the cutting edge will be avoided.—DR. C. L. ANDERSON, in *Independent Practitioner*.

A GOLD CAP CROWN.

TAKE a bicuspid, for example; root in good condition to cap. Keep it dry any way most convenient. Mix up some oxyphosphate soft, place enough on the root to form a phosphate crown, molding it into shape and size wanted while it is hardening. Before it is quite hard let the patient bite onto it, to give the right occlusion. When hard take the measure around the neck of the tooth for the size of the gold band, then take an impression of the phosphate crown with Melott's impression compound, and run a die with Melott's metal. Place the gold plate for the cap on a flat piece of lead, and with this die swage the cusps into the gold. When the cusps are formed, make the gold band, place it on the die, and with the band on the die gently swage again the cap with the cusps formed, till the cap and band are brought close together all round; then solder the cap to the band, file and polish, remove the phosphate crown from the root and place on the gold cap.—S. C. Slade, *Items*.

A GOLD CLASP, PERFECT IN FIT, EASILY MADE, AND NOT WEARING TO THE TOOTH CLASPED.

Take spring clasp-metal of proper width; bend into a hoop large enough to surround two-thirds of the tooth without touching it; attach to plate; drill three holes at carefully selected points; insert set-screws; spring over the tooth; tighten up your screws; and you will have a clasp, strong, tight, stable, which will closely fit an ill-shaped tooth without its having to be cut. The principle is that used in the surveyors tripod, which enables it to stand steady upon any irregular surface by the bringing of the three feet into the same plane.—Dr. W. C. Wardlaw, in *Headlight*.

Persons wearing plates should be instructed to wash their mouths as well as their plates. This is very important, as there is a mucus collects under the plate that is sometimes difficult to remove without a special effort. It is only neglect and for want of proper cleansing that teeth or roots decay next to a plate, and patients should be thus advised.—Dr. B. Q. Stevens.

Before taking the impression of roots for crowning, Dr. Palmer places a wooden peg in the root canal and packs gutta-percha around it, forcing the gum out of the way. The impression is then taken, and when removed from the mouth the peg comes with it.—*Items*.

What We See and Hear.

[We are always pleased to receive short, practical articles for this department, and invite any to send brief descriptions of such appliances, devices, methods, remedies, etc., as will be of interest to the profession.]

Those who desire to prepare pheno-camphor can do so easily, by dissolving three parts of camphor in one part of carbolic acid.

A Soap.—Dr. W. W. Birkhead gave the members of the M. S. D. A. the following formula, which makes an excellent soap. German green soap, 1 lb., bay rum, 1 pint.—*Archives.*

Worth Remembering.—According to Dr. Gordon White, of Nashville, "Nothing equals the ordinary Phosphatic Cement (Weston's or Justi's) for mending broken plaster casts or broken plaster teeth."

Amalgam Dies for Inlay Work.—The copper amalgam dies are most useful in such a class of cases as you have seen represented, where you have a good chance to get an accurate impression of the cavity. The amalgam is filled directly into the impression. The surface of amalgam, if thoroughly and properly set, is satisfactory to burnish to. I find it gives an inlay that will fit accurately if carried out carefully. This is applicable to making solid inlays or a sort of shell inlay.—Dr. Ames.

Fissure Drill.—I have a suggestion to make in regard to the ordinary fissure drill. When it is worn considerably, if you will grind off the end diagonally, on an oil stone, giving it a curve as you see here represented, little spurs will stand up along the edge of the ground surface at a very sharp acute angle. For entering a fissure or extending it by drawing the rotating end back and forth over the edge of enamel it will be found very effective. It has been very satisfactory to me, and it is very easily sharpened.—Dr. Case, *Ill. So.*

Treatment of Gums after Wedging.—The gingivæ require careful treatment after wedging, and after the use of ligatures, clamps, etc., it is best to use a soothing application such as a mixture of carbolic acid 95°, 6 m. Tinct. iodine, 45 m. Glycerine, 1 oz. Distilled water, 5 ozs., or when pulps have been removed of aconite and iodine equal parts, to check the after pain or inflammation of the peridental membrane. If we can get along without, we prefer as little crowding or wedging of the gums in scrufulous patients as is possible, for once separated from the necks of the teeth they may not return to a firm union and healthy teeth require healthy gums.—Dr. A. W. Freeman.

To Preserve Oxyphosphate Fillings.—A few weeks ago, Dr. Bonwill made the statement that he had discovered the means of entirely preventing the decomposition of oxyphosphate of zinc fillings by thoroughly saturating them with heated paraffine, which melts at a much lower temperature than wax. I have not tested it conclusively, but I think the idea is a very valuable one. I had occasion to put in some of these fillings some time ago, in teeth the pulps of which were very nearly exposed, and I thought it a good opportunity to make a trial of paraffine as suggested. I shall continue the test, and watch carefully the conditions. Dr. Bonwill claimed to get very good results from its use, saying that it renders the surface of the filling and interstices around it impervious to the action of acids.—Dr. G. Evans, 1*st Dist. So.*, *Cosmos.*

Preparation of a Cavity for Filling.—As human beings endowed with ordinary regard for the sufferings of our kind, we should carry out the operation with a view of in every way lessening the attendant discomfort. We should use sharp chisels in breaking down the walls of enamel. We should excavate with sharp, well-shaped instruments, cutting from the centre toward the circumference. We should use warm instead of cool or cold water in washing out the debris. We should use warm instead of cold applications as obtundants. We should use ligatures of silk, having previously used a cocaine solution upon the gums. We should use clamps adapted to the tooth. Arrange the instruments used in the dental engine so that those to be used on sensitive tooth structure shall be absolutely perfect, sharp and true, and a hand-piece that is free from defects. Sympathize with your patients in their suffering and meet any irritability on their part with a face free from resentment and as bright as a May morning.—Dr. A. H. Fuller.

Management of the Third Molar where there is Overhanging Gum.—With reference to the management of the third molar tooth after it has erupted, or after it has nearly erupted, when there is overhanging gum. If any cutting is done it must be done in the most liberal manner. I take a long pair of curved scissors and slit the gum back beyond the distal side of the molar, and then then I clip off generous quantities of the gum on either side, and then treat the surface with ethylate of sodium to still further destroy the tissues that may be inexpedient to get at. Ethylate of sodium will destroy tissue without injuring the tooth. Nitrate of silver will not do it well. Chromic acid when it does do it, will do it at the expense of the surface of the tooth. Chloride of zinc it is not possible to use well; sulphuric and other acids it were better to leave out of the mouth. —Dr. A. W. Harlan, *Chic. So., Review.*

Do Not Lower Your Prices.—Consider that in lowering your prices beneath a proper standard, you commit a threefold sin: first, against yourself; second, against the rest of your profession; and third, against the community. Against yourself, by compromising your dignity. Against your profession, because in lowering one member you lower the whole; because in instituting an inadequate price, you render it more difficult for your compeers to maintain an adequate standard of compensation, and tempt them to do likewise or worse. Against the community, by assisting to educate them in false ideas of the true value of your operations; by demonstrating the fact that you can be forced from your true position, and giving the grounds for believing that your regular price was excessive and extortionate, and that they are to be commended for forcing you nearer to a just standard.—G. L. Shepard, *Mo. So. Archives.*

Gold Contouring.—I have in a few cases put in large contours of soft gold, without annealing, using hand pressure, but the motive was more to prove the possibilities of such work than to fulfill any indications presented, my usual method being to crimp quarter sheets of No. 4 soft gold foil, and as the contour is neared, thoroughly to warm it by passing the crimped piece over the flame before cutting, not letting it get hot enough to redden, and using the mechanical mallet for condensing. A filling thus made requires little burnishing, easily taking and well retaining a high polish. If the gold has been well condensed but not hammered to death, it will be a tough filling, less brittle than one of more cohesive gold. I fully appreciate the usefulness of cohesive foil where it is needed, but its too frequent use where contraindicated is bringing it into disrepute, and striking a blow at our present system of contouring.—Dr. Coon, *Dent. Adv.*

A Good Method of Mixing and Using Amalgam.—In experimenting with amalgam I find the following mode of mixing and its application the most satisfactory; though others may have tried it, it is new to me and others I have suggested it to. Take coarse grain or granulated alloy sufficient quantity, mix up a thin paste of cement (I prefer Caulk's as it sets slow), into this incorporate the alloy until you can manipulate between the fingers; fill up cavity; it soon hardens; dress down with corundum points or wheels to smooth surface; now with a small quantity of freshly prepared amalgam (old way with mercury) with round or flat-sided burnisher burnish over a thin coating of amalgam. You will find this free from shrinkage, discoloration, less affected by heat and cold, and strong edge strength. The keeping of the cavity dry and until it sets is of great importance, and the finishing up of the filling at the same sitting another advantage.—Dr. D. B. McHenry, Grenada, Miss.

Gold Inlays.—I make the matrix of the cavity by burnishing into it number 120 rolled gold foil, furnished by R. S. Williams, or the S. S. White Company. Whenever I can do so, I put on a rubber-dam. Then if the gold matrix tears a little bit in burnishing it into the cavity, you can apply another piece of rolled gold and it will if annealed stick on. Thin gold makes a better adaptation to the cavity wall than platinum. I am careful to leave a sharp margin on the outside of the enamel in order to mark distinctly the outline of the cavity. My reason for using eighteen carat solder is because you can hold the pure gold matrix over a spirit lamp and the eighteen carat solder will flow at once.

I melt eighteen carat solder over the bottom of the matrix, put it back in the cavity and burnish until I am sure I have a perfect fit—until I can take it out without altering the shape.

Then invest it and fill up with solder to the required fullness. The cases in which I have had the greatest satisfaction have been in large cavities of bicuspids, lower molars, and on the buccal surfaces of teeth where they extend beyond the margin of the gum. These are the places that you do not fill satisfactorily in the old way. I have had no experience in making inlays in front teeth.—Dr. Wassall, *Ill. So. Report, Review.*

Disk Mandrel.—Some time since I called the attention of this society to some little sand-paper disk mandrels that I had made, with a delicate nut and holder for the same. At that meeting, Dr. Jarvie stated that he had seen, at Albany last year, a mandrel made without a nut. I thought about that, and afterwards remembering that we have mandrels made with corkscrew points for holding leather wheels, etc., I saw very quickly that that same idea, applied to our disks, ought to succeed. I had some of those mandrels made in that way, and, much to my gratification, I found they worked quite perfectly. One would suppose a sand-paper disk would not be strong enough to bear the force, and would tear off, but the sand-paper is flexible and springs away from the tooth or filling while revolving, so that, after all, they do hold well enough to wear out the disk. I have the disks and mandrels made in three different sizes, and find them almost invaluable in finishing fillings. The smallest disks are only one-quarter of an inch in diameter, and they reach where the large ones cannot. These little ones are invaluable in finishing on the labial surface close to the gums and along the exposed borders of proximal fillings.

If the cutting surface is on the outside, they do not slip off; and if it is on the inside, they still do not pull off unless they are used carelessly. When a disk becomes warm, touch it with the finger, and off it goes; there is no time lost in changing a nut.—Dr. S. G. Perry, *N. Y. Odont. So. Report, Inter.*

ERRATA.

In August Journal, page 370, second paragraph, fourth line, should read "proximal" instead of "primal." Page 371, tenth line, "instinctive" for "instructive." Page 373, second paragraph, sixth line, "thin" should be substituted for "this."

DEATH OF DR. FRANK OVERHOLSER.

Doctor Frank Overholser died of consumption at the residence of his father in Logansport, Ind., on Tuesday, July 28.

The Logansport *Times* says: The funeral was held Wednesday afternoon at four o'clock from the Broadway Methodist Episcopal church, conducted by Rev. Norris. The remains were buried under the auspices of the Knights of Pythias lodge, of which the deceased was a most worthy member. The funeral was largely attended, thus furnishing additional evidence of his popularity.

Seldom if ever has it been that Logansport has lost one more loved by all, than this young man cut down in the prime of life. In the death of Dr. Frank Overholser his father loses a most worthy son, his wife a kind and loving husband, his friends a companion whose geniality was ever present, and the city a citizen of whom we have all been proud.

He was born in Lockport, Illinois, July 26, 1862, moved to Logansport with his parents when seven years old, attended the public schools, and in 1883 graduated with honors from the dental surgery department of Ann Arbor University. He then entered the dental profession with his father with whom he remained until November, '88, when he set up in business for himself. As a dentist Frank Overholser had no superiors in this section of country, and when stricken with consumption he enjoyed a growing and lucrative practice.

Seven years ago he was united in marriage to Miss Louella Gorsuch, of Greenville, Ohio, to which union was born one daughter, Helen, who died April 16, 1891. On the 20th of last February upon the advice of his physician, Dr. Overholser with his family went to Asheville, North Carolina, where he entered the Winyah sanitarium. For a while slight hopes were entertained of his recovery, but he soon grew weaker, and fully realized that if he was to die at home, surrounded by those he loved, he must not stay too long in Asheville. Hence he arrived in Logansport on the 3d of June.

Societies.

"Wherewith one may edify another."

INDIANA STATE DENTAL ASSOCIATION.

At the thirty-third annual meeting of the Indiana State Dental Association, held at Indianapolis, June 30, 1891, the following officers were elected: President, E. J. Church, Laporte; Vice-President, R. W. Van Valzah, Terre Haute; Secretary, G. E. Hunt, Indianapolis: Treasurer, Merit Wells, Indianapolis. The association will meet the last Tuesday in June, 1892, at Lake Maxinkukee.

G. E. Hunt, *Sec'y*.

POST-GRADUATE DENTAL ASSOCIATION OF THE UNITED STATES.

The annual meeting of the Post-Graduate Dental Association, was held at the Leland Hotel, Chicago, June 24th, Dr. Cushing, President, in the chair.

The order of the day was reports of officers, transaction of routine business, election of officers and interesting discussions in regard to the future work of the society.

Officers elected for the ensuing year are as follows: President, Dr. R. B. Tuller, Chicago; Vice-Presidents, Dr. Levi S. Keagle, Vinton, Ia., Dr. A. P. Nicholson, Edgerton, Wis., and Dr. M. R. Julian, Lafayette, Ind.; Secretary and Treasurer, Dr. L. S. Tenney, Chicago.

This organization has just completed the second year of its existence and seems to have struck a popular chord in the profession as its rapidly increasing membership would indicate.

As is generally well known, the object of the society is mainly to establish a systematic course of home study, and measures are now on foot to begin this work during the year.

Those desiring further information should address the Secretary, Dr. L. S. Tenney, 96 State St., Chicago.

Our Aftermath.

DR. WILL H. WHITSLAR has removed to Cleveland, Ohio.

OHIO STATE DENTAL SOCIETY, Columbus, Tuesday, Dec. 1st, 1891.

YUNG MAN, set down, and keep still, yu will hav plenty ov chances yet to make a phool ov yureself before yu die.—*Josh Billings.*

DR. CHAS. I. KEELY, of Hamilton, has been appointed the Republican member of the City Board of Elections, for four years.

WAKE UP, BRO. GORGAS! *The American Journal of Dental Science* for April was received July 10th, and entirely made up of selections from other journals.

GAS BURNERS, under vulcanizers like the Seabury, sometimes take fire inside and smoke the boilers. The remedy is enlargement of the orifice or gas exit inside the bunsen tube.—W. H. S.

ARTIFICIAL TEETH ARE DUTIABLE.—The treasury department has decided that imported artificial teeth are dutiable, according to the material and the chief value in their composition.—*Press News.*

MONNET'S CHLORIDE OF ETHYL tubes, that have been opened, may be stopped by covering with softened red gutta-percha, binding same with a small (about 24 gauge) copper wire.—W. H. S.

DOMESTIC DENTISTRY.—Unsophisticated Parent: Hello there, nurse, what's the baby yelling that way for? I can't read at all. Nurse: He's cutting his teeth, sir. U. P.: Well, see that he doesn't do it any more, or you lose your place.—*Life.*

DEAD.—John Wesley Buzzerd, D.D.S., of London, Ohio, died, aged 30 years, July 27, 1891, after a short illness. He graduated from the Ohio College of Dental Surgery last spring and was, at the time of his death, a partner of Dr. Joseph W. Chance.

CINCINNATI DENTISTS spent their vacation as follows: Dr. Frank A. Hunter, in the Adirondacks; Dr. Grant Mollyneaux, Dr. A. I. Buxbaum.

Saratoga; Dr. E. G. Betty, Chicago; Dr. R. J. Porre, Esculapia Springs, Ky.; Dr. J. S. Cassidy, Old Point Comfort; Dr. C. M. Wright, near Oxford, Ohio.

THERE IS ONE OHIO town where, according to present appearances, there will soon be an opening for a new dentist. The local paper makes the following plaintive protest: Adams township's "dentist" had better desist. His nefarious practice is becoming oppressive. When professional men resort to the use of hog-wringers instead of forceps in extracting teeth, it is practically necessary that something should be done.—*Cleveland World.*

BIRDS WITH TEETH.—To Prof. Marsh chiefly is to be attributed the discovery made on this continent of ancient types of birds which had teeth. At the present day the notion of a bird's having teeth is a joke, but formerly it was reality. There were ever so many species of birds in this olden time that had teeth, most remarkable among them, perhaps, being the "hesperornis," a giganic diver, somewhat resembling a loon."—*Syndicate paper.*

YES, DEAR DOCTOR HUNGERFORD, of the *Western Dental Journal*, "there was a crying for high attainments at this same meeting" (the 7th District of Ohio), and there was also plenty of good, practical discussion, not to mention the fun that our reporter saw fit to include in his report. "Unadulterated twaddle" and "bosh" he thinks good, but "Ye Gods" is better, for on the same page the gods you seem most to favor are shown to be Bacchus and nicotine.—W. H. S.

DOUBLES.—The dead body of a young girl was recently fished up from the deep waters of the Hudson River. Life-long and intimate friends of a young person named Dollie Davis identified the body. They swore to the dentification. They not only recognized the face and features, but certified that certain moles and scars on the corpse were known to be the sole property of the aforesaid Dollie. A dentist identified "a filling." At the moment identification was complete Dollie herself, scars, moles, and filling, appeared on the scene to the amazement of all. Dollie did just what any other young woman would have done upon seeing her other self in a coffin. She fainted. —*The Illustrated American.*

"THE PERFECTLY HEALTHY TONGUE is clean, moist, lies loosely in the mouth, is round at the edge and has no prominent papillæ The tongue may be furred from local causes or from sympathy with the stomach, intestines, or liver. The dry tongue occurs most frequently in fever and indicates nervous prostration or depression. A white tongue is diagnostic simply of the feverish condition, with perhaps a sour stomach. When it is moist and yellowish-brown it shows disordered digestion. Dry and brown indicate a low state of the system, possibly typhoid. When the tongue is dry and red and smooth look out for inflammation, gastric or intestinal When the papillæ on the end of the tongue are raised and very red we call it a strawberry tongue, and that means scarlet fever. Sharp, pointed, red tongue will hint of brain irritation or inflammation, and a yellow coating indicates liver derangement."

QUESTION AND ANSWER DEPARTMENT.—A man was being tried at the Old Bailey for illegal practice. "What are you?" asked the counsel. "A Surgin," was the reply. "How do you spell it?" "Z-u-r-g-i-n." "*How?* pray excuse me, I did not quite hear." "C-u-r-g-i-n." (Laughter.) "You bleed people, I suppose?" "Yes, of course I do." "Where do you bleed them?" "In the temporal artery." "Where is the temporal artery?" "Why, in the arm of course; you don't think you can catch me, do you? I am too good a dentist not to know the temporal artery." (Prolonged laughter.)

Sir Astley Cooper relates the following of an Irish candidate before the Examining Board of the London College:—"What is a simple and what is a compound fracture?" asked the examiner. The reply was, "A simple fracture is when a bone is broke, and a compound fracture when it's all broke." Sir Astley asked him what he meant by "all broke." "I mean," he replied, "broke into smithereens, to be sure." I ventured to ask him what was "smithereens." He turned upon me with an intense expression of sympathy upon his countenance. "You don't know what is smithereens? then I give you up."—*English papers.*

A NEW DENTAL COLLEGE.—The Cleveland Homeopathic Hospital College, having been importuned to add to its School of Medicine a Dental branch, has after careful consideration resolved to do so. The inducements held out to this College, why this, more than any other, should be the one to incorporate this branch of study are manifold; among them, that this College enters upon its forty-second year, and is known widely as giving its students the highest and best facilities for learning.

The above school will open September 23, 1891, with the following faculty:

FACULTY.—W. H. Whitslar, M.D., D.D.S., Dean. Geo. H. Wilson, D.D.S., Supt. of Infirmaries.

INSTRUCTORS.—W. H. Whitslar, M.D., D.D.S., Principles and Practice of Dentistry, Dental Pathology and Embryology. H. F. Bigger, A.B., M.D., Operative and Clinical Surgery. J. Kent Sanders, B.S., M.D., Principles and Practice of Surgery and Surg. Pathology. E. R. Eggleston, M.D., Diseases of the Nervous System. Frank Kraft, M.D., Materia Medica and Therapeutics. Edward A. Darby, M.D., Anatomy. I. P. Wilson, M.D., Physiology. D. H. Beckwith, M.D., Sanitary Science. H. D. Bishop, M.D., Chemistry. H. L. Frost, M.D., Practical Anatomy. C. D. Ellis, M.D., Osteology. Geo. E. Turril, M.D., Histology. D. R. Jennings, M.D., D.D.S., Operative Dentistry and Appliances. Dr. J. E. Robinson, Irregularities. Dr. Henry Barnes, Operative Dentistry. Dr. S. B. Dewey, Care of Children's Teeth and Continuous-Gum Work. I. E. Sampsell, D.D.S., Prosthetic Dentistry. L. P. Bethel, D.D.S., Dental Medicine. Geo. H. Wilson, D.D.S., Metallurgy. H. F. Harvey, D.D.S., Operative Dentistry.

We wish the new school every success.

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Contributions.

"A word fitly spoken is like apples of gold."—Solomon.

THE THIRTY-FIRST ANNUAL MEETING OF THE AMERICAN DENTAL ASSOCIATION.

Saratoga Springs, N. Y., August 4, 1891.

Reported by N. S. Hoff, D. D. S., Ann Arbor, Mich.

Continued from page 430.

Dentition of the Felidæ, by A. H. Thompson, Topeka, Kan.

The dentition of the cat is interesting because of its high specialization. The extremes of form in the teeth of animals indicate the possible variation in less highly specialized teeth where compromise forms obtain because of more variety in diet. The kind of food determines the degree of specialization. Hence we have in carnivora and herbivora examples of extremes in specialization. The general characteristics of the carnivora are, small incisors, large canines with long roots, wide diastema, reduction of the molar series, cutting blades on the molars, etc. In no other group of animals are the jaws so well and variously armed with teeth. The jaws are short, muscles strong, and the movement limited to the verticle. Food is not masticated or insalivated, being raw flesh it is only necessary that it should be torn and swallowed as it is easily digested.

The most highly specialized teeth in the felidæ are the sectional premolars, and the prehensile canines, which are so characteristic as to place this family at the head of the carnivora in specialization.

The paper gives at considerable length the peculiar and important characteristics of the felidæ teeth making an exceedingly interesting study in comparative odontology.

DISCUSSION.

Dr. W. C. Barrett wished to congratulate the association on the fact that its members were turning their attention to scientific subjects in which they ought to be especially interested, and hoped this paper would receive a careful consideration. Dr. Barrett thinks the true archetype is to be found in the dentition of the ungulata, as seen in the pig, where the dentition is represented by 48 teeth. Of the carnivora the dog tribe have a more highly specialized dentition than the felidæ or cat tribe. He does not think the kind of food a factor in the specialization of this dentition.

Dr. C. N. Peirce: We may draw practical conclusions from such papers that are of interest and value as well. There is undoubtedly a general resemblance in the dentition of animals living upon similar food, and it has been noticed that where the dentition has been specialized in form because of diet, that there is a decided tendency toward reduction in the number of teeth. In the horse 44 teeth constitute the typical dentition; but in the domesticated and blooded horse, the dentition is reduced by 4, possibly due to disease, nervous affections, or food. In the omniverous man his dentition seems to be in a transition state; the tendency of the teeth to decay may be due to the poor tooth tissue resulting from this uncertain condition. There is a notable tendency in the teeth of the Chinese to dwarf the cuspids; this may be due to the common diet of rice, etc. In these people there is also a tendency toward enlargement of the incisors.

It is not likely that the human family will eventually become edentulous; but the habits of the people and the diet will produce modifications in the number as well as the forms of the teeth, adapting them to the uses required. The character of the food, its consistency, etc., will also have much to do with the character of the tissues developed in the tooth.

Dr. Harrow: In man there is no canine tooth, but the cuspid tooth takes its place, and its function is not to tear food, but it serves as a cutting tooth and as a guide in closing the teeth, thus assisting in securing a perfect closure or articulation.

Dr. Barrett: It is a curious fact that all the animals native of Australia, have the marsupial dentition entire or in marked modification, and imported animals with different dentitions are reduced in size.

Dr. Truman asked Dr. Peirce why he thought the third molar was destined to be lost in man's dentition, and why he considered the cuspid to be the canine tooth, changed in form and size?

Dr. Peirce: I have personal knowledge of over twenty patients in my practice who are of sufficient age, but have never erupted the third molar, and know no reason why this ratio should not prevail in every practice. Examinations of Gorilla and Hottentot skulls shows plenty of space behind the third molars in every case, and the third molar tooth is large and well developed; while in man the third molar is small, or inconstant and occupies a very limited space.

There is no excessive development of the canine in animals. It is an ancestral development, which time and limited change of circumstances and conditions have not sufficed to cause its modification.

Dr. Brophy: The third molar is not invariably smaller than the other molars; frequently it is larger. I am inclined to think that the lateral incisor is more often lost than the third molar.

Dr. Peirce: The deficiency of the lateral incisor is more likely to be transmitted from parents than the third molar.

Dr. Morgan: If the superior third molar is lost because of non use, why should we find in the same mouth the superior third molars absent and the inferior third molars present? or why should the lower lateral incisor be present when the superior lateral incisor is gone?

Dr. Rhein: Is it not possible to account for the absence of the superior lateral incisor because of loss of its germ by ancestral harelip?

Dr. J. D. Patterson read a paper entitled,

DISEASES OF THE ORAL MUCOUS MEMBRANE — ITS PATHOLOGY AND INFLUENCE UPON THE TEETH.

Incipient causes of disease in this membrane may be accidental, constitutional or hereditary. The accidental cause usually obtains while the others predispose and assist. Accidental causes are numerous: mechanical alone or accompanied by infectious material. Diseases causing low functional activity are an important factor in all causes. Thermal changes are capable of modifying normal function to the extent of producing disease in the oral mucous membrane: by first checking the secretion of the mucous glands, causing determination of blood to the part, effusion of serum, abnormal exfoliation of cells, purulent mucus discharge, and a general breaking down of the structures into pus, then the subepithelial tissues become involved and extensive inflammatory condition results. The above stages accompany disease in which constitutional, hereditary and zymotic influences do not necessarily assist, although micro-organisms may be present in the later stages.

"Mouth breathing" is a source of irritation and disease because of thermal changes, and evaporation of the moisture necessary to the normal function of the membrane. Uncleanness and the accumulation of calcareous deposits are the most frequent causes of local disturbances.

A catarrhal condition of the mucous membrane of the nasal and oral cavity, because of the continuity of tissue is likely to produce points of irritation and disease of the gums. Owing to the peculiar structure of the gum margins, they are particularly liable to disease by mechanical irritants and infection when there is a catarrhal condition present, producing often the condition called pyorrhœa alveolaris. The catarrhal affection is not a disease, but an impairment of function favorable to the production of disease by other causes. There is no catarrhal diathesis, and there is no proportionate relation between a catarrhal condition and pyorrhœa alveolaris. Climate may have a direct influence upon catarrhal affections, but it is not known to have any upon pyorrhœa alveolaris. Catching cold or anything that will interfere with normal function is capable of producing disease of the mucous membrane of the oral cavity, independent of hereditary conditions, constitutional diathesis, or the influence of micro-organisms.

The irritated mucous membrane, which we find weeping out an abnormal quantity of mucus or muco-pus, is not pathognomic of any special irritant, but simply a condition. Pyorrhœa alveolaris is only a designation of a certain stage in catarrh of the oral mucous membrane, and is not necessarily pathognomic, and may result from a great variety of causes.

Dr. H. A. Smith read a paper entitled,

Phagocytosis.

The paper gave a brief statement of the amoeboid character of the white blood corpuscle, its history and the reason why the name phagocyte had been given to it. It is by some now thought to be the agency whereby parisitic influences in the tissues of the body are destroyed or overcome. It is probable that these leucocytes are the agents which prevent excessive irritation from septic influences in the practice of filling root canals, especially where the practice of "immediate root filling" is practiced. The reason why bacteria are not found in the living pulp is because of these phagocytes circulating in the blood and permeating the tissues and coming into contact with them, destroy them. In the dead pulp there are no phagocytes and consequently the bacteria proliferate unhindered. Teeth in which the pulp is destroyed by a blow which does not fracture the enamel or dentine but destroys the pulp by the shock, oftentimes remain for years without the pulp, dead though it is, undergoing putrefactive change, or causing inflammatory conditions. This may be due to the fact that the leucocytes were extravasated in such numbers at the time of the accident as to overcome all bacterial influences. The successful treatment of pyorrhœa alveolaris by surgical means may be due to the presence of large numbers of the leucocytes in the consequent hightly inflamed tissues. It is hoped that a wider study of this aspect of the germ theory for accounting for all diseases and curative agencies may be made.

DISCUSSION.

Dr. Barrett: It may be true that the phagocyte is the agent which counteracts the influence of the bacteria, by destroying the germ itself, by enveloping it in its peculiar digestive apparatus, where it breaks down its cell wall and appropriates its protoplasm, rejecting the cell wall. This has not been positively demonstrated, but it is probably true.

Dr. Cravens: Is pleased to present his complimenes to the phagocyte, as it gives him a scientific reason for his practice of immediate root filling, and accounts for the success he has had with this method of practice.

Dr. Waters: We should not forget that there is always a first cause which must not be overlooked. This first cause should receive first attention and the attending causes should not receive the entire attention, important though they may be.

Dr. Leroy asks if pyorrhœa alveolaris ever effects devitalized teeth. He had seen it stated that it did not.

Dr. Rhein said the worst case he ever saw involved devitalized teeth as much as those with live pulps.

Dr. Crawford does not think that pyorrhœa affects teeth that have had their pulps destroyed, removed, the canals treated and filled. Alveolar abscess is frequently mistaken for pyorrhœa.

Dr. Patterson: Constitutional diathesis is a very important factor in the production of pyorrhœa, but I did not endeavor to discuss it in my paper.

Dr. T. W. Brophy, chairman of Section VII, reported four papers, the first one read was by Dr. W. C. Barrett, entitled.

A Plea for Conservatism.

The errors into which an unrestrained enthusiasm has led Profs. Koch, Lester and Pasteur, have recoiled and we suddenly discover that all lines of research, except along the line of bacteriology, cannot be ignored in our search after scientific truth. Some years ago on the floor of this society the work of Dr. Miller was discredited or hooted at. But now the truth has more than made its way; in fact the pendulum has swung back too far and there is danger that we may have an antiseptic craze. The study of the micro-organisms of the human mouth is essential to an intelligent conception of oral pathology and dental medication. But germicides and antiseptics are not the only remedies to be made use of in the treatment of oral diseases. We are apt to run riot when a new idea is discovered.

So much attention has been given to antiseptic agents that curative agents seem to have been laid aside, and when failure to cure results the agent used is blamed and pronounced worthless, when the fault lies with the operator, because he has not recognized the conditions and made the proper selection of a remedy.

The immediate root filling fad is an example of how a little knowledge can work a great mischief.

We must realize that in almost no case, which the dentist is called upon to treat, is absolute asepticism possible or practicable. In capping pulps and treating abscesses, antiseptics are useful, but they are not sufficient. Because we cannot successfully exterminate micro-organic influences entirely is no reason why antiseptics are inefficient; they are valuable helps toward cures, and must always be used. No practitioner should be content until he possesses the most approved means for sterilizing all instruments used in treatment so as to prevent the possibility of inoculating susceptible tissue. In healthy tissue it may be possible that the phagocytes are capable of destroying all infectious matter that would ordinarily be introduced, but debilitated tissue would become inoculated by the smallest possible amount of infectious material, because there is a scarcity of the phagocytes.

Again it is not enough to deluge a cavity or root canal with detergents, saturate it with germicides, soak it with antiseptics, or even exclude infected saliva by means of rubber-dam. A skillful operation must be made and anything necessary to the accomplishment of this end must not be overlooked. The perfectness of the operation will increase the permanency of the antiseptic treatment. Let us honor and encourage the patient and industrious investigators, who are giving us scientific facts, but condemn the tyro, who catches only a portion of the truth and brings into disrepute the most important scientific truths because of his ignorance and bungling. Earnestly seek new things, prove all, and retain the true and good.

Wednesday Evening.

At the opening of the session, Dr. Crouse for the Dental Protective Association, made a statement as to the condition of the patent litigation. The next suit to be tried will be the one involving what is known as the Low bridge patents, any one possessing evidence will oblige the association by communicating at once with Dr. Crouse. The committee appointed last year to examine the books and accounts of the association, reported the affairs of the association well managed and a comfortable balance of $20,000 in good securities, etc.

In lieu of a paper, Dr. Peirce verbally stated a case of a patient of a neighbor dentist having swallowed a large sized rubber-dam clamp, which a surgeon who was called in consultation could not recover. The patient was sent home and instructed to eat bountifully of mashed potatoes exclusively for several days. The result was that the clamp passed through the alimentary canal without doing any harm and was recovered on the second day incysted in a hard ball.

Dr. J. S. Marshall read a paper in which he gave the history of the use of Pyoktanin in the treatment of a case of malignant neoplasm, originating in the antrum, and involving the superior maxillary and malar bones. Two operations had failed to eradicate the difficulty. Parenchymatous injections of pyoktannin were used; strength one part in five hundred of a 0.6 per cent. solution of chloride of soda in distilled water. Twenty minims were injected at first and the amount gradually increased to one drachm. In six weeks the patient was considered well enough to resume his business occupation, and it is confidently thought he is cured. Special antiseptic precautions were observed to prevent inoculation and the formation of sores. In all the treatment, the exhibition of the drug produced no symptoms of systemic derangement.

Dr. J. D. Patterson described a case illustrating some new features in the treatment of a fracture of the inferior maxilla, we are enabled to intelligibly describe without reference to the drawing accompanying the case.

Dr. Truman W. Brophy described his method of closing the fissure in cleft palate. Always operate when the patient is young in order to succeed. Described a case where he had operated on a babe three weeks of age. Two holes were first drilled through the superior maxillary bones from the buccal surface on one side, passing through the bottom of the nasal cavity just above the palatal plate to the opposite buccal surface; one of these holes was toward the front and the second farther back and under the malar bone. The soft palate was closed with sutures in the usual way, and the edges of the palatal plate pared; a wire was then passed through one of the holes that had been drilled and back through the other; the two ends were then brought together and twisted until the edges of the bone had been brought into contact and the wires left until union had taken place. The bones at this age yield readily and when brought together by the wire compress they are held in place definitely until nature has had time to unite them permanently.

DISCUSSION.

Dr. Marshall thought such an operation on a child three weeks old was too severe, and he should fear a fatal result from shock. The germs of the teeth would be liable to destruction from the drilling and manipulation of the wire.

Dr. Cravens did not think the development of the teeth would be interfered with as they were already too far advanced.

Dr. Vauk has had two fatal experiences from operations on children for cleft palate, and he would be inclined to say that such an operation was extra hazardous.

Dr. Marshall related a case of where he had operated successfully for cleft of the soft palate on a patient forty-nine years of age.

Dr. Brophy said that children were less liable to suffer from shock than adult persons, and the soft or semi-gelatinous condition of the bones of the face at this time of life made it possible to bend them and close the cleft with certainty. It is quite important in these operations that the tissues be brought into definite and close contact, and to be sure to get this it may be advisable to lap them sufficiently to prevent separation by any possible movement.

Dr. Vauk said that it was not desirable to cut entirely through the soft palate in drawing it together, but make slits which will permit stretching.

Under Section I, Dr. D. R. Stubblefield read a paper on

Peroxide of Hydrogen.

The Doctor had made careful analyses of several prominent manufacturer's pooducts, with the view of determining the agents which are the active cause in corroding or dissolving hard tooth tissues. In three of the most prominent preparations he found both hydrochloric and sulphuric acid, and none of them contained any ozone. One preparation when evaporated left a white residue which charred when strongly heated. If the profession is restricted to the use of such deceptive preparations, over reliable signatures stating that they contain no acids, how can we expect anything but disastrous results from the use of this drug?

Referring to the case reported at the meeting last year by Dr. Peirce, where a large amount of exostosis on the root of a tooth had been completely dissolved away and the cementum and enamel attacked, after being in a bottle of peroxide of hydrogen for three weeks; the peroxide was renewed with fresh every other day, Dr. Stubblefield said this was due to the sulphuric acid, as there was an insoluble white precipitate, the chloride of calcium would be readily dissolved in the fluid and there would be no precipitate. Dr. Stubblefield does not think there is a neutral preparation of peroxide on the market. The ebulition of gas is observed in root canals containing no pus or blood, and in experiments made with blood and pus outside of the mouth it was found that a degree of heat corresponding to body heat was neccessary to secure ebulition; indicating that the presence of blood and pus were not necessary to produce decomposition of the hydrogen, but that warmth was a factor. Again neutral peroxide of hydrogen was injected into root canals containing blood and pus and no ebulition was observed; and hydrochloric acid alone was used root canals containing blood and pus, and the same kind of ebulition was observed as when acid peroxide of hydrogen was used. It would seem that the acid peroxide has a valuable place because of the acid it contains as a detergent and disinfectant, but it would seem a wise precaution to follow its use with an ant-acid or neutralizing preparation when used on the teeth.

DISCUSSION.

Dr. Peirce: The tooth I exposed to the action of the peroxide of hydrogen was largely exostosed. I was very much surprised to find the exostosis all removed, but the enamel and dentine scarcely affected at all.

Dr. F. Abbott: I was much pleased with Dr. Stubblefield's paper, but it makes me sad to think that I have been relying upon peroxide of hydrogen as a sure test for the presence of pus in deep-seated and obscure places.

Dr. Vauk: It seems to me it is an easy matter to test the different preparations with litmus, and when an acid preparation is found, use it with caution or take precautions to prevent its doing harm. It is a very unstable preparation.

Dr Friederichs: The very fact that the heat of the mouth is sufficient to decompose this material makes it the valuable preparation it has proven to be; by its decomposition gases are evolved which force their way to the surface, carrying with them foreign and dead material which we want to get rid of.

Dr. Truman: Nothwithstanding this adverse report we must not give up the use of peroxide, for the readiness with which it decomposes and gives up its elements makes it invaluable not only as a detergent, but as a germicide and disinfectant through the liberated oxygen, sulphuric acid, etc.

Dr. Ingersoll: This preparation is not a chemical compound; the extra oxygen is present because of force used in the preparation, and consequently it is easily liberated when even slightly warmed. Peroxide of hydrogen is not a medicament at all because it possesses no stimulating property whatever. It behaves very badly in closed cavities, antrum, and blind abscesses, because it coagulates the pus in the cavities, and this coagulated mass becomes an intolerable irritant. Don't like it in pyorrhœa or any case where there is pus.

Dr. Horton suggested using a dilute solution in warm water to wash out the pus before using the peroxide in full strength.

Dr. Stubblefield: Peroxide of hydrogen as at present prepared has no special advantage over aromatic sulphuric acid, which will accomplish all that peroxide will do and has a stimulating or medicinal virtue besides. The pain accompanying its use is due to the combination of the water and sulphuric acid, producing heat.

Dr. E. Parmly Brown described a new method of making a porcelain crown with a collar around the end of root. A collar is made of platinum to fit the end of the root, and the band is left wide enough so that it may be cut in slits all around down to the face of the previously prepared root; the projections are then bent down, one at a time, over the end of the root forming a complete covering or cap. A Brown or Logan crown is then placed in position, the pin passing through the cap into the pulp canal, and cap and tooth crown removed together and fused together with porcelain in the furnace. The cap may also be soldered onto the crown.

Dr. Louis Ottofy made the report of Section II on Dental Education, Literature and Nomenclature.

At the present time there are in existence thirty-three dental colleges; 1241 students graduated from these colleges this year, being an increase of two hundred and seventy. Twice as many students are graduated now annually as five years ago. Thirteen colleges graduated this year less than 100 students; Eight graduated 250, and 12 graduated 900. There are 103 dental societies in the United States, distributed as follows: 4 national, 7 inter-State, 41 State, 22 district and local, and 29 city. The total enrollment of all these societies is 4000. Eighty-two of these societies were unrepresented in the American Dental Association last year.

The post-graduate dental association, organized on the Chautauqua plan, is a promising institution; its course of study and reading embraces a special and definitely outlined course of reading in dental literature, which when completed will entitle the reader to an examination, which if satisfactory will secure a certificate.

(To be continued.)

NATIONAL ASSOCIATION OF DENTAL FACULTIES.

The eighth annual meeting of the National Association of Dental Faculties was held at Saratoga Springs, commencing Saturday, August 1, 1891; the president, Dr. L. D. Carpenter, Atlanta, in the chair.

The following colleges were represented at the meeting:

Baltimore College of Dental Surgery.—R. B. Winder.
Boston Dental College.—John A. Follett.
Chicago College of Dental Surgery.—Truman W. Brophy.
Harvard University, Dental Department.—Thomas Fillebrown.
Kansas City Dental College.—J. D. Patterson.
Missouri Dental College.—W. H. Eames.
New York College of Dentistry.—Frank Abbott.
Ohio College of Dental Surgery.—H. A. Smith.
Pennsylvania College of Dental Surgery.—C. N. Peirce.
Philadelphia Dental College.—Henry I. Dorr.
State University of Iowa, Dental Department.—A. O. Hunt.
University of Michigan, Dental Department.—J. Taft.
University of Pennsylvania, Dental Department.—James Truman.
Vanderbilt University, Dental Department.—W. H. Morgan.

Louisville College of Dentistry.—James Lewis Howe.

Indiana Dental College.—Junius E. Cravens.

University Dental College.—George H. Cushing.

Dental Department of National University.—James B. Hodgkin.

Dental Department of Southern Medical College.—L. D. Carpenter.

School of Dentistry of Meharry Medical Department of Central Tennessee College.—G. W. Hubbard.

University of Maryland, Dental Department.—Isaac H. Davis.

Royal College of Dental Surgeons of Ontario.—J. B. Willmott.

American College of Dental Surgery.—T. Clendenen.

Dr. H. B. Noble, of Columbian University Dental Department, was also present, but not as a delegate.

The University of Denver, Dental Department, was reported upon favorably by the Executive Committee, and was elected a member of the association, and its representative, W. F. McDowell, took part in the meeting.

The applications of Western Dental College, Kansas City, and Dental Department Medical College of Tennessee, Knoxville, were reported favorably, and under the rules laid over for one year.

On motion, it was directed that the National Association of Dental Examiners be requested to appoint a committee of five to confer with a similar committee from the National Association of Dental Faculties in regard to matters of mutual interest between the two associations, their conclusions to be reported back to this meeting. The president apppointed as the committee on behalf of the Faculties Association, Drs. Peirce, Winder, Eames, Truman, and Morgan.

The committee subsequently reported the following resolutions as having been agreed to by the conference committees, and recommended that they be confirmed, which was accordingly done:

Resolved, That it is recommended to the State boards that when a graduate after examination has been refused a license and his college requests information as to the causes of his failure to pass the examination, the boards shall furnish the faculty with a detailed statement of the subjects and questions on which the applicant has failed.

Resolved, That we discountenance the publication by the State boards of the names of colleges whose graduates have failed to pass.

The committee also reported favorably a communication from the National Association of Dental Examiners, which had been referred to them, as follows:

"As the next session of the colleges marks the commencement of the new plan of three years' college instruction, we recommend that this associoation request the National Association of Dental Faculties to require each school to issue each year an announcement containing a list of the students classified in the three grades of seniors, juniors, and freshmen; that this list also in each instance designate the absentees, and that each school be required in the same announcement to publish a list of the graduates of the preceding sessions."

On motion of Dr. Cushing, the term absentee in the foregoing was construed to mean one who for any reason has not attended a full course.

The president being asked to rule upon the resolution adopted last year requiring dissections, decided that it was mandatory.

The following, offered by Dr. Abbott, was adopted by a unanimous vote:

Resolved, That any college whose regularly appointed representative fails to sign the constitution within one year from the time of its election to membership shall be dropped from the roll of membership of this association.

Dr. Patterson, from the committee on codification of the rules, presented a report, which was amended and adopted, as follows:

ENTRANCE.

Resolved, That a preliminary examination be required for entrance to our dental colleges. Such requirements shall include a good English education. In case of any applicant failing to pass a satisfactory preliminary examination, the other colleges of this association may be informed of the fact. (Saratoga, 1884; Chicago, 1885.)

Resolved, That a candidate for matriculation who presents a diploma from a reputable literary institution, or other satisfactory evidence of literary qualifications, shall be admitted without further examination. (Saratoga, 1884; Chicago, 1885.)

Resolved, That after the session of 1890–91 a diploma from a reputable medical college shall entitle its holder to enter the second course in dental colleges of this association, but he may be excused from attendance upon lectures and examinations upon the following subjects: General anatomy, chemistry, physiology, materia medica, and therapeutics. (Excelsior, 1890.)

Admission to Senior Class.

Resolved, That the colleges of this association may receive into the junior or senior classes only such students as hold certificates of having passed a satisfactory examination in the studies of the freshman or of junior years respectively; this certificate to be a pledge to any college to which they may apply that a previous year has been properly spent in the institution. (Chicago, 1885; changed, Saratoga, 1891.)

Resolved, That applicants for admission to advanced standing from foreign countries shall be required to furnish properly attest evidence of study, attendance upon lectures, etc., the same as required of applicants here; and they shall pass the intermediate examinations. (Chicago, 1885; changed, Saratoga, 1891.)

Form of Intermediate Certificate.

Place..................Date ....

This certifies that............................has been a member of the ....class in the............................college during the session of............

He was examined at the close of the session in the studies required (as follows), and is entitled to enter the...........class.

Attendance................

Freshman Year.	*Junior Year.*
a...............................	a................................
b...............................	b................................
c...............................	c................................
d...............................	d................................
e...............................	e................................

Each student completing a regular course in any college of this association must be furnished with the above certificate, without which he shall not be accepted by any college for admission to the advanced class, except by conference with and consent of the school from whence he came. (Chicago, 1885; changed, Saratoga, 1891.)

Resolved, That the dean of each school shall upon request furnish the executive committee with the exact character of the intermediate examination held in his school, and whether or not the examination is final. (Niagara, 1886; changed, Saratoga, 1891.)

ATTENDANCE.

Resolved, That candidates for admission to the colleges of this association, who are undergraduates in a reputable medical college, may be admitted to the junior class subject to the rules of examination governing admission to that class.

Resolved That no college shall give credit for a full term to any student who has entered later than twenty days after the beginning of regular lectures. (Chicago, 1885.)

Resolved, That no college of this association shall admit a student after twenty days from beginning of regular term, except those colleges having a term of more than five months, and that they shall have an extension of time in proportion to the length of term. (Niagara, 1886.)

Resolved, That attendance upon three full regular courses of not less than five months each in separate years shall be required before examination for graduation. (Saratoga, 1889.)

GENERAL.

Resolved, That the fees of all dental colleges, as far as possible, be uniform. (Chicago, 1885.)

Resolved, That the members of any faculty belonging to this association may take part in its discussions, but only the delegated representatives shall vote upon a question before the association. (Niagara, 1886.)

Resolved, That dental schools which do not conform to the regulations of this association shall not be recognized by the association. (Niagara, 1886.)

Resolved, That a standing committee on schools be elected, whose duty it shall be to ascertain as far as practicable the workings of all dental schools in this country and Europe, and be required to furnish information to the dean or secretary of any college when desired, and to report in writing at each meeting of this association. (Niagara, 1886.)

Resolved, That we agree to adopt a graded course of instruction aud an intermediate examination between each course, which course of instruction and examination shall be conducted as the faculties of the different colleges represented in this association may deem proper. (Saratoga, 1884; changed, Saratoga, 1891.)

Resolved, That no charges against any faculty shall be reported to the association by any committee before both parties interested have been notified, and an opportunity given for a hearing before said committee. (Washington, 1887.)

Resolved, That as a matter of courtesy, when a student leaves one school to go to another, the dean of the second college shall write to the dean of the first callege, inquiring whether there may be any objections to the transfer; this to be done whether the student presents a certificate or not. (Louisville, 1888; changed, Saratoga, 1891.)

Resolved, That hereafter a delegate representing a college in this association shall be a member of a teaching faculty, and shall present credentials from the college to which he belongs, legally authorizing him to represent his college before he shall be entitled to vote. (Louisville, 1888.)

Resolved, That it shall be obligatory upon the dental schools belonging to this association to publish the names of all their matriculates and graduates of the preceding session, with the states and countries from which they come, in their regular annual announcement, and that an asterisk (*) accompany the name of each person not in attendance, and the words "not in attendance" be placed as an explanatory foot-note at the bottom of the page.

Resolved, That the degree of Doctor of Dental Surgery shall not be conferred by any college belonging to this association honorarily, except by the consent of this association. (Saratoga, 1889.)

Resolved, That the term anatomy shall be interpreted to include didatic and practical anatomy, and that in the latter at least two parts of the cadaver shall be dissected in some regularly appointed anatomical department. Excelsior, 1890.)

MEMBERSHIP.

Resolved, That all applications for membership in this association shall be made in writing, and referred to the executive committee. (Niagara, 1886.)

Resolved, That applicants for membership in this association shall be regularly incorporated dental colleges or departments of medical colleges or universities, wherein at least one full course of lectures has been delivered, and that such dental colleges or departments shall have been in existence at least one scholastic year. (Washington, 1887.)

Resolved, That no application for membership in this association be reported to the executive committee, unless received at least sixty days before the regular meeting. (Washington, 1887.)

Resolved, That all applications for membership reported upon favorably by the executive committee shall lie over one year before final action may be taken thereon. (Saratoga, 1889.)

Resolved, That we recommend that students take two full courses in studies of a general character, such as anatomy, physiology, chemistry, general principles of surgery, materia medica, and therapeutics, and three courses in those of a specical dental character. (Excelsior, 1890.)

Recommended, That for a full course of lectures the minimum sum of college fees be $100.00. That diploma fees may be omitted, and an examination fee of not less than $25.00 be substituted therefor and made non-returnable; that a matriculation fee of $5.00 be charged annually. Special-course fees to be $10.00 for each branch taken, and $5.00 matriculation fee.

The American College of Dental Surgery, Chicago, was suspended from membership for two years for violation of the rules of the association in accepting students after the prescribed time and giving them credit for a full term.

A resolution dismissing charges against the Philadelphia Dental College was adopted.

The following were offered and laid over for one year under the rules.

By Dr. Hunt:

Resolved, That in case of charges against any college no final action shall be taken until all parties concerned shall have at least thirty days' notice.

By Dr. Truman:

Resolved, That at all future meetings of the National Association of Dental Faculties the delegates shall consist of members of faculties, and demonstrators will not be received.

By Dr. Fillebrown:

Voted, That after June, 1893, the yearly course of study shall be not less than seven months, two months of which may be attendance upon clinical instruction in the infirmary of the school, now known as intermediate or infirmary courses.

By Dr. Hunt:

Resolved, That after the session of 1892–93, four years in the study of dentistry be required before graduation.

Dr. Dorr offered a resolution that students who have successfully passed their examinations for advanced standing shall have their certificates given or mailed to them within thirty days after such examinations shall have been completed. Adopted.

The following officers were elected for the ensuing year: W. H. Eames, St. Louis, president; J. D. Patterson, Kansas City, vice-president; J. D. Patterson, Kansas City, secretary; H. A. Smith, Cincinnati, treasurer; J. Taft, A. O. Hunt, and Frank Abbott, executive committee.

The president appointed the following standing committees: Ad Interim Committee, James Truman, Frank Abbott, and Thomas Eillebrown; Committee on Schools, D. R. Stubblefield, J. A. Follett, J. Lewis Howe, J. E. Cravens, S. H. Guilford.

Adjourned to meet at the place of the next meeting of the American Dental Association, on the Monday previous, at 10 o'clock.

NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

The National Association of Dental Examiners held its tenth annual Session at Saratoga Springs, commencing Monday, August 3, 1891.

In the absence of the regularly elected officers, Dr. L. D. Shepard was elected president, and Dr. Levy secretary-treasurer pro tem.

The following State boards of dental examiners were represented:

Vermont.—James Lewis.

New Jersey.—Fred. C. Barlow, Fred. A. Levy.

Ohio.—J. Taft, H. A. Smith, L. E. Custer, C. R. Butler.

Pennsylvania.—Louis Jack, W. E. Magill.

Georgia.—George W. McElhaney.

Maryland.—A. J. Volck.

Massachusetts.—L. D. Shepard, J. S. Hurlbut.

Mississippi.—W. H. Marshall.

Iowa.—J. T. Abbott.

Louisiana.—Geo. J. Friedrichs.

The following State boards were admitted to membership:

Tennessee.—J. Y. Crawford.

New Hampshire.—E. B. Davis.

Maine.—E. J. Roberts, D. W. Fellows.

A committee consisting of Drs. Shepard, Fellows, Crawford, McElhaney, and Magill, was appointed to confer with a similar committee from the National Association of Dental Faculties, for the better understanding of questions involving educational interests.

The committee subsequently reported that the conference committee had agree upon the following resolutions, which were, on motion, confirmed:

Whereas, There can be no question that the main object in view of both the National Association of Dental Faculties and the National Association of Dental Examiners is the better preparation of the young dentists for usefulness in the community, and that to secure this end it is desirable that the State boards of dental examiners and the colleges should work in harmony; therefore

Resolved, That it is recommended to the State boards that when a graduate after examination has been refused a license and his college requests information as to the causes of his failure to pass the examination, the boards shall furnish the faculty with a detailed statement of the subjects and questions on which the applicant has failed.

Resolved, That we discountenance the publication by the State boards of the names of colleges whose graduates have failed to pass.

The committee on colleges reported that they had received reports of the number of matriculates and graduates of twenty-eight colleges, as shown on the following page:

NUMBER OF MATRICULATES AND GRADUATES OF THE DENTAL COLLEGES.		Matriculates.	Absentees.	Graduates.	Ratio.
Baltimore College of Dental Surgery	Baltimore, Md.	221	3	76	34.3
Boston Dental College	Boston, Mass.	96		31	32.2
Chicago College of Dental Surgery	Chicago. Ill.	323		94	29.
Harvard University, Dental Department	Boston, Mass.	44		15	34.
Kansas City Dental College	Kansas City, Mo.	110	5	43	40.
Missouri Dental College	St. Louis, Mo.	90		26	28.8
New York College of Dentistry	New York, N. Y.	283	8	85	30.9
Ohio College of Dental Surgery	Cincinnati, Ohio.	208		75	36.
*Pennsylvania College of Dental Surgery	Philadelphia, Pa.	252	17	94	40.
†Philadelphia Dental College	Philadelphia, Pa.	315		146	46.3
University of California, Dental Department	San Francisco, Cal.	63		16	25.4
University of Iowa, Dental Department	Iowa City, Ia.	161		58	36.
University of Michigan, Dental Department	Ann Arbor, Mich.	132	1	29	22.1
University of Pennsylvania, Dental Department,	Philadelphia, Pa.	206	3	83	40.8
Vanderbilt University, Dental Department	Nashville, Tenn.	135		43	31.8
Northwestern College of Dental Surgery	Chicago, Ill.	14		3	21.4
Indiana Dental College	Indianapolis, Ind.	96		40	41.6
Dental Department of Southern Medical College,	Atlanta, Ga.	103		38	36.8
School of Dentistry of Meharry Medical College, Department of Central Tennessee College	Nashville, Tenn.	5		1	20.
University of Maryland, Dental Department	Baltimore, Md.	163	4	64	39.7
Columbian University, Dental Department	Washington, D. C.	19		2	10.5
Royal College of Dental Surgeons of Ontario	Canada.	67		27	40.
College of Dentistry, Department of Medicine, University of Minnesota	Minneapolis, Minn.	36		7	19.4
American College of Dental Surgery	Chicago, Ill.	167		49	29.
Aggregate		3312		1144	34.5
*15 female matriculates. †9 female matriculates.					
DENTAL COLLEGES NOT CONNECTED WITH THE NATIONAL ASSOCIATION.					
German-American	Chicago, Ill.	22		11	50.
Western Dental College	Kansas City, Mo.	61	1	9	15.
United States Dental College	Chicago, Ill.	43		11	25.5
College of Dentistry, University of Denver	Denver, Col.	12		5	41.6
Aggregate		139		36	
Whole Aggregate		3451		1180	

Four colleges, members of the National Association of Dental Faculties, had failed to report, namely: University Dental College, Chicago; Dental Department, University of Tennessee; Louisville College of Dentistry; and Dental Department of National University, Washington, D. C.

The committee recommended that "as the next session of the colleges marks the commencement of the new plan of three years' college instruction, that this association request the National Association of Dental Faculties to require each school to issue each year an announcement containing a list of the students, classified in the three grades of seniors, juniors, and freshmen; that this list also in each instance designate the absentees, and that each school be required in the same announcement to publish a list of the graduates of the preceding session."

The committee also reported the following list of colleges which they recommend as reputable:

Baltimore College of Dental Surgery, Baltimore, Md.
Boston Dental College, Boston, Mass.
Chicago College of Dental Surgery, Chicago, Ill.
College of Dentistry, Department of Medicine, University of Minnesota, Minneapolis, Minn.
Dental Department, Columbian University, Washington, D.C.
Dental Department of Northwestern University (now the University Dental College), Chicago, Ill.
Dental Department of Southern Medical College, Atlanta, Ga.
Dental Department of University of Tennessee, Nashville, Tenn.
Harvard University, Dental Department, Cambridge, Mass.
Indiana Dental College, Indianapolis, Ind.
Kansas City Dental College, Kansas City, Mo.
Louisville College of Dentistry, Louisville, Ky.
Missouri Dental College, St. Louis, Mo.
New York College of Dentistry, New York City.
Ohio College of Dental Surgery, Cincinnati, Ohio.
Pennsylvania College of Dental Surgery, Philadelphia, Pa.
Philadelphia Dental College, Philadelphia, Pa.
School of Dentistry of Meharry Medical Department of Central Tennessee College, Nashville, Tenn.
University of California, Dental Department, San Francisco, Cal.
* Northwestern College of Dental Surgery, Chicago (defunct).
University of Iowa, Dental Department, Iowa City, Ia.
University of Maryland, Dental Department, Baltimore, Md.
University of Michigan, Dental Department, Ann Arbor, Mich.
University of Pennsylvania, Dental Department, Philadelphia, Pa.
Vanderbilt University, Dental Department, Nashville, Tenn.
Western Dental College, Kansas City, Mo.
Minnesota Hospital College, Dental Department, Minneapolis, Minn. (defunct).
St. Paul Medical College, Dental Department, St. Paul, Minn. (defunct).

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* The diplomas of this college are discredited after 1889.

The report was adopted, and the committee on schools was enlarged to consist of one member from each State board. Dr. Louis Jack was appointed chairman of the committee, and the president, secretary, and chairman were authorized to complete its membership and to fill vacancies.

The following was adopted:

Resolved, That this association requests the several boards represented in this body not to indorse beneficiary students.

The following officers were elected for the ensuing year: L. D. Shepard, president; W. E. Magill, vice-president; Fred. A. Levy, secretary-treasurer.

The officers were empowered to select the time and place of the next meeting.

Adjourned.

DENTAL SECTION OF THE AMERICAN MEDICAL ASSOCIATION.*

Reported for the OHIO JOURNAL.

Continued from page 439.

DR. GEORGE ALLAN read a paper on

THE GENESIS OF THE CONTOUR FILLING,

of which the following is an abstract:

I think a little less attention has been given to practical instruction in building up the contour filling than to preaching about its many advantages and beauties. This close attention to one thought will also preclude entering into any discussion as to when and where to attempt the full restoration in the shape of the tooth under treatment. Individual judgment largely controls practice in all cases, and the wise dentist, like the wise physician, always adopts the elective motto.

Taking up the building or making of a contour filling, a threefold division of the subject naturally presents itself,—

1. The preparing of the cavity.
2. The placing therein of the filling material.
3. Finishing and polishing the completed work.

Now a good deal that may be said about the preparing of the cavity will apply to the simpler and easier operations of face and crown fillings; but this one wide difference must be constantly kept in mind,—viz., as the size of the cavity increases, the difficulties and dangers increase, not proportionately, but in a geometrical ratio, and therefore a relatively greater care and attention must be given to all the details of the larger and more complex operation.

On the size and shape of the cavity, on the proper distribution of retaining undercuts or pits, so as to protect and strengthen weak walls and throw the burden on strong ones, much good judgment can be placed, and the writer is convinced that just here may be found the cause of many failures. Undercuts are made too deep, and retaining-pits made in such positions or manner as to either weaken the tooth or endanger the pulp. Deep undercuts, though they make operations easier, are seldom called for, and endanger the completed work by weakening the walls of the cavity, and by making real obstacles to forming a homogeneous, well-packed filling.

The deep undercut, though it holds the great bulk of the gold in place, is itself difficult to fill. To do so well takes much time and care and the use of exceedingly small pluggers, and this they may not receive. Where all the walls of a cavity are standing, and the face of the tooth adjacent to the cavity is perfect, the walls of the cavity should be left as nearly parallel as possible, and no pits of any kind made.

Overlapping gold is gold in a dangerous position. I would strongly advocate such a preparation of the cavity as will minimize this danger even if our ideal in contouring be not carried out.

Many think that, in all cases, the packing of the gold should be commenced at the cervical wall of the cavity. This is a mistake. Oftentimes more certain and rapid work can be done by starting the filling back in the grinding surface, and building downward. And so this point should be considered, and the cavity shaped accordingly.

As the enamel forms the edges of most large cavities, its proper management is a point of interest. Long ago I advocated the complete removal of the thin edge of enamel often found at the neck of the tooth; and this I did for the double reason that it was only slightly adherent to the dentine just there, and so liable to split off during the operation of filling, and, secondly, it was very difficult to make a smooth edge on it. Leaving the thin edge leaves a weak spot, and that is bad.

A final point to observe in shaping the cavity consists in making the edges smooth and polished, and just here the great advantage of the dental engine, with its rapidly revolving bur, comes to the front. No hand instrument, no matter how much care is used, can compete with it. A sharp, well-cut bur will do in a few minutes far more effective and perfect work than the sharpest hand-instrument can in a far longer time. If, in addition to the bur, the edges are polished with the wood point armed with powder, or still better, with an uncut round, soft-iron point, armed with diamond dust, perfect edges can be quickly obtained.

Two great essentials are to be now considered,—the perfect adaptation of the gold to all the walls of the cavity, and the accomplishing this with a minimum amount of force; and a third may be added,—that the filling be made homogeneous and solid throughout.

Imperfect adaptation makes failure almost a certainty, and undue force (and by this I mean any amount of force over and above that required to condense the gold) is almost equally fatal in the end.

The quality in gold that we make use of in building up a filling of this character,—viz., its welding property when pure and freshly annealed,—is not one that can be trifled with.

The amount of force used must always be proportionate to the size of the pledget to be packed, and exactly, too; not enough force fails to insure solidity, and too much has a tendency to bring out the harsh qualities of the gold. As the pledget must be packed in the exact position in which it is first placed, and cannot be moved from it, great care and good judgment are required to avoid pits, and to make certain that the surface is kept even, for it is much more difficult to fill a pit or sharp depression than to continue a flat surface, and the permitting of pits near the walls of the cavity is especially to be avoided, for the extra force necessary to fill them too often weakens the walls or even crumbles the enamel. So the rule to be observed is to, as far as possible, carry a uniform surface upward, and as the filling grows keep the marginal portions a little in advance of the centre.

Another advantage that results from this plan of procedure is that it makes more rapid work possible, in that you can use larger points. A pit or depression near the walls necessitates the employment of small points, for the point in use must always be a trifle smaller than the pit to be filled. This suggestion is by no means an unimportant one, and a little thought will soon convince one of that fact. The correct packing of gold is, in truth, an art of itself, and requires an educated touch and correct eye.

Where to start a filling is a matter of some moment. It is generally commenced at the cervical wall, but cases frequently occur where the commencement may be made with advantage back on the grinding face of the tooth, and the filling carried backward or forward to the floor of the cavity. An advantage frequently arises from this method, for, by carrying the gold along the sides of the cavity towards the bottom, any movement of the gold is avoided, and pits to accomplish this same purpose are not required. Any one who has not tried this plan will be astonished to find how frequently it facilitates the operation. Deep pits, in the writer's opinion, are great nuisances, and are only dmissable when other means fail to accomplish their purpose.

What has been said regarding the manner of making a filling leads naturally to a consideration of the points to be used, their shape, and the best methods of applying the force necessary for condensation of the gold. If the gold is to be built up layer by layer, in a series of planes, the points themselves should have flat surfaces.

A round point may have some limited utility at times, but never can be relied upon to any extent. It would be a matter of the greatest difficulty to make a large, uniformly-packed filling by their use only. Deep serrations are faulty in that they cut the gold and require extra power to force the gold into a solid.

How to apply the requisite pressure is now to be considered, and possibly it is the most important consideration of all. How to apply just enough force for the purpose, and to apply it quickly and uniformly and evenly.

I take it that few would seriously consider hand-pressure alone as offering the best solution. Let alone its being the most laborious and tedious method, it rarely produces perfect work. We cannot get along without it, especialty in commencing operations; but good judgment and good work alike demand that it be supplemented by some means more under control, more direct in its action, and developing more power.

The automatic mallet, in some of its various forms, took its place, and so well did it do its work that it will probably always hold its own and retain a well-deserved place in the dentist's outfit. Then followed the electric mallet, a step in advance, and a big one; but it had many inherent defects that greatly impeded its general adoption.

To-day the mechanical mallet is slowly but surely coming to the front, and the writer feels certain that the day is not far distant when it, in some of its modifications, will supersede all others.

Take a look at the mechanical mallet in operation and notice how it works. You will see that the point is placed in contact with the gold and gently pushed forward. This throws the farther end of the mandrel holding the point back, so that the lug or rounded bit of steel, with which the rapidly revolving wheel is armed, comes in contact with it, and it is pushed forward, and this is repeated with every revolution of the wheel, so that from one thousand to three thousand impulses may be given to the point every minute, the direction, number and power of these impulses being perfectly under the control of the operator.

In the mallet I employ, which is the Bonwill mallet, as modified by Dr. S. Perry and Mr. Weber, there are eighty threads to the inch in the adjusting screw, and forty notches in the collar, so that a movement of the collar one notch brings the plugger mandrel one thirty-two-hundredth of an inch, or the thickness of the diameter of a human-blood corpuscle, nearer to or farther away from the revolving wheel, and yet small as this distance is, it is distinctly appreciable to the operator and patient alike.

A valuable point I have observed is that where the serrations of the point are rightly made,—that is, having one side longer than the other,—the point travels over the surface of the filling and has simply to be guided by the operator, so that if placed near the centre of the filling, it will move over the face of the gold in just the direction and manner required; thus it becomes the easiest thing in the world to pack towards the walls of the cavity. The gold is plastered in position, as it were, easily and rapidly.

Too high a polish cannot be given to the perfected work. Do the best we can, and we will fall short, far short, of Nature's model. Time and labor cannot be thrown away, if intelligently employed in the finish.

Where a tooth has been mutilated by disease, or the file and disk, a question often arises, as before mentioned, as to whether the gold shall be allowed to overlap the edges of the cavity, or simply be rounded out from them. It is doubtful whether gold can be made to lay against tooth-substance in such a manner as to prevent the ingress of fluids. The thinner and wider the overlapping gold, or the thinner and deeper the overlapping gold, the greater the doubt and uncertainty. If the diameter of the gold is one-third or one-half greater than that of the cavity, we may be almost certain of trouble in the near future.

The difficulty in making a perfect edge is also greatly increased in these cases, and so it is a safe rule to observe to finish the gold to fit the cavity, and to take the place of an overlapping lid as little as possible.

In shaping, the articulation should be always left in such a condition that the filling should, in mastication, be pressed back into the tooth, not out from the cavity.

As a means of education, I know of nothing superior to making fillings out of the mouth. Any one who has not tried it will be surprised at the amount of instruction that can be acquired in this way, and in no other. Any earnest worker who makes the experiment will be astonished to find, not only that the operation is not easy under these simple conditions, but as he aims for perfection, how difficult it is to attain. His edges will remain imperfect, and his powders will scratch, and he will wonder how he ever succeeds in the mouth.

To sum up: In preparing your cavity, be careful to avoid deep undercuts or pits, and throw as little strain on the enamel as possible, and make clean, polished edges. In packing the gold, bear in mind that your filling must be homogeneous throughout. Perfectly fill the cavity and build up in a series of planes, and in finishing imitate nature in the high polish you put upon your work, for, do your best, you will fall far short of her beautiful handiwork. To do perfect contour work requires care and skill. With practice and experience one will be surprised to find how often the impossible becomes possible and the difficult easy of attainment.

Dr. R. R. Andrews read a paper on the

GROWTH OF THE CEMENTUM,

the following of which is an abstract:

In 1858, Magitot, a French histologist, claims to have found within the follicle of a developing tooth a special organ for the development of the cementum. In 1861, Robin and Magitot made a presentation of the same facts anew. With the exception of these authors, I am not aware that any other authority has recognized the presence of this special organ; while such men as Kölliker, Waldeyer, Herz, and others have formerly denied sts existence. In my own investigations I have not been able to trace it with certainty, although there are appearances in a fully-formed follicle of a tissue under the calcifying dentine-germ, between it and the outer covering of the sacculus, that might admit of the supposition of the existence of such an organ. I heve noticed this appearance in sections from embryos from the pig and the calf. At a later stage, where the crown is further developed, there is also to be seen infoldings of the tissue at the base of the germ that may develop into an organ for the growth of the cementum, as stated by Magitot. But in teeth more matured, where the cementum has already commenced its growth, I cannot trace even the outlines of 'a special organ, although I do not consider my investigations to have been extensive enough to warrant me in denying its existence altogether.

Wedl, whose description of the development of the dentine and the enamel is so minute, has but little to say about the development of the cementum. He tells us that at the margin of the crown the dental sacculus contracts, and upon its inner surface the formation of the cement is affected, increasing gradually as the formation of the root advances. The lower segment of the dental sac becomes therefore the root membrane of the tooth. He believes with Tomes that Nasmyth's membrane belongs to the cement. Again, he states that the dentine and cement are connected together by means of a layer composed of an agglomeration of transparent globules of varying degrees of thickness. The spaces intervening between the latter (interglobular spaces) are irregularly notched, and frequently in very close proximity to one another. He considers that the cement commences outside of this layer, but some of my own sections show it as a dividing line. In describing the methods in which hypertrophy of the cement is formed, he speaks of the various sizes of the corpuscles which form it, stating that many of them have a glistening appearance. Smaller corpuscles are sometimes attached to to the sides of larger ones, or are blended with them. Large and small ones also occur separately. These so-called corpuscles are, I believe, globules of calcoglobulin, forming, by merging into others, a layer of calcoglobulin that shall form the matrix of the hypertrophied cement.

Tomes tells us that it is difficult to point out any distinguishing structural character between primary bone and that of the cementum. The cells close to the surface of the forming cementum which were formerly called osteal cells have now been named osteoblasts. No bone is formed until after the appearance of this osteoblast tissue, and Rollet believes that these osteoblasts are essentially a new growth; they are so distinctly marked off that it almost assumes the character of an epithelium. If we harden a partially-formed tooth in chromic acid, and subsequently decalbify and cut it transversely through the root, we meet with the following structures from without inward: On the outside is the outer part of the sacculus, now the periosteum. Internal to this is a layer to which the name cambium has been given, consisting of roundish cells with processes. These lie in a reticulum made up of cells which give out a small number of homogeneous transparent processes. By the inosculation of these processes a net-work is formed. Between this net-work and the fully-formed cementum lies the osteoblast layer, consisting of much larger cells. As the osteoblasts form a continuous layer and are very numerous, it is obvious that only a small percentage of them ever form lacunæ, or bone cells, or otherwise retain their individuality. As the process of calcification goes on, the outlines of individual cells become lost in the general transparency of the matrix, only a cell here and there remaining as a lacuna. Again, he states that contiguous osteoblasts become fused together by their exteriors, so that their individuality is lost.

Klein tells us that the tissue of the tooth-sac represents the matrix from which the cement is formed; its structure and function are that of the osteogenetic layer of the periosteum, and that the formation of the cement out of that tissue is identical with subperiosteal bone.

My investigations show that, if we examine the developing tooth just after the cementum has commenced to form, we shall find that the matrix of the cementum is made up of masses or layers of that tissue which we find everywhere on the borderland of calcification, between the organic and inorganic substance. This is a tissue which Tomes has said was produced solely by the destructive action of weak acids, but that his conclusions are erroneous is proven by the fact that this tissue appears in sections where no acid has been used. It is a tissue formed by the coalescing of minute, globular bodies, calcospherites, into globules and layers of a tissue called calcoglobulin. The minute globules, in forming the matrix of cementum, seem to come from the osteoblasts, and form the calcoglobulin layer in somewhat the same manner as I have described and pictured in the developing dentine. The smaller globules by merging into each other form larger ones. They have a glistening appearance, like fat-cells, are about the size of the osteoblasts, but are not cells, though often taken for them. They have no membrane and are without a nucleus. They are the bodies which Tomes and others say become fused together by their exteriors. Outside of the layer formed by the globules, the developing matrix of the cementum, we see a row of cells, which Rollet stated looked like an epithelium. They are the osteoblasts, or cementoblas, and the granules that have been described in their substance are very minute calcospherites, which the cells give out to the forming matrix. Tomes has called them osteal cells. They are the same in appearance as those we see around the edge of the developing bone of the jaw. Just exterior to these cells we find roundish, nucleated cells with innumerable processes, reminding one somewhat of a stellate reticulum, only that the stellate character is not so marked. Just outside these we find the connective tissue which is really the periosteum. If there exists at this time a special cement organ, it must be formed by this slight amount of stellate tissue which is between the periosteum and the layer of osteoblasts that are against the forming cementum. I find that the osteoblasts, which are said to be full of a peculiar granular substance, are, when the tissue has been properly prepared, found to be filled with minute spherical bodies, which have a glistening appearance. Across the developing matrix of the cement are found numerous fibres, probably connective-tissue fibres, that are also found in developing bone. They were seen and described by Sharpey, and are named after him, Sharpey's fibres. They become calcified within the matrix.

As the cementum grows thicker we find that the developing matrix is infolding in its substance large nucleated bodies which appear to be connective-tissue corpuscles. They are somewhat larger than the osteoblasts, and are forming the cement cells, or lacunæ. They have a higher function than the osteoblasts,—that is, they are to give nourishment to the matrix, being connected with others by means of canals or processes, of which there are many, some of which run in the direction of the termination of the dentinal tubes, as though connected with them. When enclosed by the developing matrix of the cement, minute, glistening, globular bodies are seen within their outline, or membrane; indeed, it appears as though these minute globules were deposited on the periphery of the cell by the cell itself, and here fusing, give the cell its pecular characteristic shape, which is not as regular as that in bone, and is oftentimes very much larger. Their processes, probably, anastomose with the dentinal tubules through the interglobular spaces of the so-called granular layer, although I have never been able to trace them. I look upon the granular layer itself as a condition caused by an arrest of the developmental process, while the first layers of the dentine were being formed. It has its existence solely from the fact that in the first-forming layer of dentine the globules or calcoglobulin which form it matrix did not fuse together. It is exactly identical to the interglobular spaces found in the crown. The point that I would emphasize in this paper is that the matrix of the cementum is formed from a secretion of the osteoblasts, and this secretion is a multitude of minute globular bodies given out against the dentine. In speaking of the formation of exostosis, Tomes states that at the junction with the root he finds a substance that is dense. It is torn with difficulty, and under pressure slips about between the two glasses. It is gelatinous, osseous matter, and with it may be seen rounded, amorphous molecules. This is a good description of calcoglobulin. Tomes says that cementam is not developed by a direct matamorphosis of the periosteum, but by the calcification of a new growth. Cells are produced, the individuality of which becomes lost in the process of calcification; the interior of the cells seems stuffed with an opaque and dense substance disposed in large granules, among which the nuclei cannot positively be pointed out. The large granules within the cells are really calcospherites, and careful preparation of the tissue will clearly show them. The merging together of these globules forms a layer, and this calcifying, layer after layer, gives to the cement the peculiar laminated appearance that is often seen. It is by no means difficult to trace evidences of this globular formation in the cementum of fully-formed teeth; indeed I have severrl sections of human teeth that show the outlines very clearly,—so clearly, in fact, that one might call it the interglobular spaces of the cement, probably caused from some arrest in the full development of the tissues.

Dr. Grady, of Baltimore, next read a paper on

Dental Infirmary Patients — The Use and Abuse of Dental Charity.

He said: My object in this paper is to call attention to the abuse of dental charity, to illustrate its magnitude, and to protest (as every honest and independent man who wishes well to the profession and to its respectability should) against the looseness with which dental colleges dispense their so-called charity.

You gentlemen, familiar as you are with recent medical literature, if not appalled at the rapid growth of the dispensary evil, fully realize that it is an evil, that it is taking the means of livelihood from many deserving men, that it is growing, and that it must be combated to be kept within proper bounds.

In Birmingham the out-patients of hospitals have advanced in twenty years, 1867 as compared with 1887, from 67,000 to 166,000. Almost one-half of the people of Edinburgh, Scotland, receive their medical advice gratis. Nor is this all. The number of persons who in any year actually avail themselves of such aid must of necessity be smaller than the total number who would do so were they forced by sickness or accident; and it looks as if more than half the population were in the habit of expecting medical treatment gratis.

In New York the amount of free work done in hospitals has increased ninety per cent. in the last decade. A Western medical editor, who last summer visited some of the hospitals and clinics of the great metropolis, is quoted in the discussion of the question, "Should a poor man study medicine?" as saying, "What was most striking, outrageous as it is, was the great number of well- and fashionably-dressed, evidently well-to-do people, both male and female, who applied for free treatment. At the ———, on Tuesday, August 12, there were five hundred and sixty-eight patients, and, judging from their appearance, we venture to say that three-fourths at least of them were abundantly able to pay for medical advice."

Concerted opposition to dental infirmary abuse has been organized in Baltimore, and the Maryland Dental Protective Association, composed of a majority of the practicing dentists in that city, not including those pecuniarily connected with dental schools, came into existence February, 1890; the object of the organization being to regulate the administration of dental charity so that the greatest good may come of it. The members, believing that the impulse must come from the dentists rather than the colleges, are doing what they can to obtain an abatement of the evil which is making such inroads into their practice. Nothing so far has resulted from the movement except the adoption of a resolution,—

"That each of the dental schools be requested to place in the infirmaries (near the entrance) record-books in which shall be printed in bold type on each page, 'For the poor only,' and in which shall be entered the name and address of all applicants for dental service. After such registration each applicant shall receive a card also headed, 'For the poor only,' if he or she admits inability to pay the usual office fees; all others shall be rigidly excluded from infirmary privileges. This card shall be retained by the patient and presented at each visit, and until the completion of all necessary services, when the card (endorsed by the operating student with his statement) shall be returned to the demonstrator and placed on file. The record-books and the cards shall be opened for public inspection at all reasonable times."

The president of the Association has also visited the mayor of the city to request that no appropriations be made the dental schools for 1891 unless in the contract there be included a provision that (1) all applicants for dental services shall be registered, and (2) that the record-books be open for inspection. Appropriations of four hundred and five hundred dollars had been made in 1888 and 1889 to one of the dental schools "for supply medicines to the indigent sick of the city of Baltimore."

As no man's personal rights are in the issue, I give you some of the information elicited as to infirmary charges and infirmary practice:

1. "Our infirmary privileges are extended only to those unable to pay the usual office fees (all others are rigidly excluded); gold fillings, seventy-five cents to two dollars and fifty cents; amalgam and other plastics, twenty-five cents to one dollar; vulcanite (full upper or lower), five dollars and fifty cents; gold or continuous-gum, twenty-five dollars; no record of 'charity patients' to whom relief is extended without fee other than extractions and pathological cases."

2. "The charge made is intended to cover actual expense of materials used and whatever may be used in a charitable way; there is usually a surplus of receipts over expenditures; minimum charge for filling with gold, fifty cents; for dentures, six dollars; these amounts vary, of course, if a large quantity of material is used or in the case of dentures being made on metal bases."

3. "The dental college charge simply for material used in plugs and dentures, and tries to avoid doing for people who are able to pay regular dentists."

4. "We average about eight thousand patients of all kinds yearly; charge for gold fillings and other work about what material costs, estimating rather over than under, as we can't afford to lose by our good works."

5. "The fund we collect from our clinics amounts to about five thousand dollars per year of ten months, while we are in operation."

6. "Charges are slightly more than cost of material; we aim to have the infirmary self-supporting."

7. "We try to have the charges for material used cover the waste and as much of the running expenses of the infirmary as practicable."

8. "Gold for about one thousand patients, for which a profit is charged; make no distinction in patients."

9. "No regular tariff for services; endeavor to discourage well-to-do by making charges higher than in office."

10. "Charge for gold filling about one-half what dentists charge."

11. "Our purpose is to make infirmary self-sustaining," etc.

The true work—the only legitimate work—of dental colleges should be to educate students for professional life, to perfect the professional education of the dentist. But this preliminary training should not be used, as it sometimes is, to lower the dignity or emoluments of private practice. For pecuniary interest, some Faculties attract as many students as possible (over three thousand one hundred were in attendance at the various dental colleges of the country for the session 1890–91), whom they send forth in the spirit of rivalry into the ranks of the profession without a thought that the means for subsistence for these men is diminished by dental infirmaries taking patients which these graduates should have, that having raised up these men to professional life they have the further duty not to pull them down, and that they are warring upon the livlihood of their professional brethren.

The competition of some dental college infirmaries affects to an appreciable degree dentists injuriously will be obvious to every reflecting person at the bare mention that "about twenty-five thousand patients are attended to yearly" by one dental college, and "on an average for nine months in the year relief is extended to about one hundred patients a day" by another; that one dental college which was "extending relief to more than two thousand charity patients" in 1889 reported next year (1890), "more than ten thousand of such cases," and another which reported in 1889 "the charity patients number four thousand three hundred and twelve," in 1891 (two years later) gave the number cases "twelve or fifteen thousand."

This competition is most onerous to the dentists of least income, and to the practitioners who are struggling against the odds of cheap dentistry in an effort to maintain an honorable position and eke out of their labors sufficient income for a respectable living. The dental infirmaries being open to all classes and conditions of men and women who desire low-priced services, few, if any, questions are asked so long as the charges are paid, no matter how elegant and costly the habit nor how many jewels displayed. This pernicious example of cheap dentistry is an injustice to those dentists who resist mercenary competition and endeavor to render their bills in conformity with standard fees.

Are there not poor enough to supply "clinical patients" without encouraging the well-to-do to degrade the profession by responding to the enticing and seductive advertisement, "Many of the operations are performed free of charge, and all others at the cost of materials only," or the knowledge that "during the first two months of the session we furnish all materials to patients free of cost," although it may be said in excuse of the work done for them, "the operations are faulty and but the handiwork of students." Is it not true benevolence and sound policy to remove, if possible, competition from those least able to bear it? If fair-minded men think so, if the Faculties of dental schools think so, then let the welfare of the whole profession supersede and extinguish the selfishness of the few.

A dentist who would endeavor to obtain practice after the model of the pretentious dental infirmary announcement—"free to all—all operations known to modern dentistry performed in most workmanlike manner; gold-foil and artificial teeth at actual cost; amalgam or silver, white, tin, and gutta-percha fillings free; this is the first time such an opportunity has ever been presented to every one to save those important organs (the teeth) free of cost; old and experienced demonstrators in charge; the same decorum will be observed as in private office," etc., etc.—would be accused of unprofessional conduct, of acts unworthy the lowest grades of the profession, and set down among his fellows as unprincipled, a professional outlaw fit to "send to Coventry."

However painful it may be to admit, it cannot be denied that methods which are legitimate for a dental college are not improper for the individual dentist, although claimants for public patronage may not see the question in this equivocal position after they have worked themselves into dental college Faculties.

But the effects of the practice are not worse than the statements in the advertisements. One of the most pregnant counts in the indictment against the dental college infirmaries is that they advertise "gold-foil and artificial teeth at actual cost." Dental colleges should give an equivalent for the fees they demand: to do *more* is charity, to do *less* is fraud.

In conclusion, what is the duty of the hour? What, it may be asked, do members of the dental profession propose for the evil which they allege to exist so much to their prejudice and detriment? Is it to close the dental infirmaries? Not at all, except, possibly, during the vacation when no lectures are delivered; because in our present social condition the dental infirmary may be necessary (I will not say necessary evil.)

I suggest the following for consideration as possible remedies; other thinkers may be stimulated to supplement what has been omitted. Oneness of aim does not imply identy of means.

1. Go back to the practice of the time-honored pioneer: an operating infirmary "for the benefit of the students," operations "among the indigent" only "by the students under the immediate *eye* and direction of their instructors," "all expenses borne by college."

2. Let no "students have the privilege of operating upon their own patients (private) during the sessions," either at the college or at their homes.

3. Provide for dental infirmary privileges to persons recommended by dentists or by some inquiry agency familiar with the circumstances of applicants, similar to the Charity Organization Society of Baltimore.

This is an age of associations, hence it is desirable that State societies be formed which shall co-operate in protesting emphatically against the abuse of dental charity and in taking effectual measures for its correction, so that in case of application for State or municipal (financial) aid on the plea that "the Faculty are receiving now scarcely any remuneration, they ask that they be relieved from the cost of the very charitable institution which they have necessarily connected with the college"; or "the Faculty find themselves compelled to ask aid from the State; they are not willing that the institution shall perish without giving the State an opportunity to preserve it," it may be made known that no such assistance in given in the cities of Boston, New York, Philadelphia, Washington, Chicago, Indianapolis, Cincinnati, Louisville, Minneapolis, or San Francisco by the tax-payers to dental schools.

After the discussion on the subject the following resolution was adopted:

Resolved, That this section would suggest to the National Association of Dental Faculties the importance of some action towards correcting the abuses of the charities of infirmaries of dental schools.

(To be continued.)

Editors' Specials.

"Write the Vision and make it plain."

DENTAL SOCIETIES.*

Man is a gregarious animal. The human is a social race. Else why such large and populous cities? We are told that all the sheep in the world would be in one flock were they not worried by wolves, driven by dogs, or fenced apart by greedy owners for mercenary motives. We are forced into tribes and other sub-divisions by the yankee saw-mill power known as the force of circumstances. And not only is the race as a whole, social or gregarious, but each caste, clique, or craft, shows the same trait, or character in this respect. We are often jealous of our fellow craftsmen when viewed as the business rivals; but even this jealousy softens in tone till it is recognized as legitimate competition in business.

But it would require a range too wide to include the whole race in our present line of thought, hence, let us consider the influence of associated efforts in our own profession, noticing those of others only as they may throw light on ours, in the way of teaching us to follow good examples, or to avoid mistakes.

The memory of the writer reaches back to a date in which the dentists of the West were of a low grade of tinkers. We do not allude to the morals of the dentists, as a class, or to those of individual dentists. The character of the work done was low, in the sense of its being unskillful. Those engaged in the calling were mechanics of less skill than the blacksmiths, gunsmiths, or carpenters. When a young physician we heard two of them in conversation, one trying to sell the other a recipe for obtaining a cast whereby a gold or silver plate could be stamped to fit the arch of the gums. It seemed to the listener that previous to obtaining his new method, he had relied on bending a wire to the general shape of the arch, instead of constructing a plate. A sale was not made, and each went his way. This was before the era of dental societies, and dental periodicals.

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* Read before the 7th District Dental Society, Xenia, May 19, 1891.

The first association among dentists organized for mutual benefit, was the American Dental Society. It was composed of the best dentists of America, and it did incalculable good. It adjourned, *sine die*, at New York, in 1856. Various explanations of its demise were given; but our own opinion is that it died of dignity. Its members were mostly in the east; and it held but one meeting in the west, in Cincinnati; and at that one it made arrangements for it final departure, leaving its good-will, if not other assets, to the American Dental Convention. An event of some interest occurred in reference to its only western meeting. Its annual meetings were held in August, and, accordingly, it adjourned to meet in Cincinnati, in August, 1854. But the the President took the responsibility of postponing the meeting till May, 1855, giving as reasons for so doing, that in August the Ohio river, from Pittsburgh to Cincinnati, would probably be too low for the passage of steamboats, and as a large majority of the members lived east, it was unreasonable to require them to travel by stage coach from Pittsburgh to Cincinnati. It met in May, and adjourned to meet in August, 1856, in New York, where, with a quorum present, it adjourned without day.

Not long after the formation of the American Society of Dental Surgeons, the Mississippi Valley Association of Dental Surgeons was formed, on the same general plan as the older Society. Both had long names. Both were highly respectable. The one died by its own act; and the first time the writer of this ever saw the other, a special committee, of its own appointment, had reported in favor of a *sine die* adjournment, and the lines of discussion indicated that the report would be adopted, but the chairman of the committee finally asked leave to withdraw the report, which was granted, and so this society, the second organized, is still in active duty, and since 1856 has been the oldest dental society in existence. It received an influx of new blood, or at least younger blood, and renewed life, and new methods were introduced, and it became the pattern society after which many, if not a majority of the others were modeled.

In the first years of its existence it had no fixed place for meeting, but met on adjournment, mostly, however, at Cincinnati; and in the day of its perambulatory existence it met always in hot weather, but in its revival period alluded to above, it met at the close of the sessions of the Ohio College of Dental Surgery.

Some thought that the meetings being held in cool weather was the principal cause of their improvement; others thought that as the college commencement occurred at the same date, the additional attraction caused fuller and more general attendance on the part of the profession, thus rendering the meetings more interesting. Let that be as it may, it has been a lively, and one of the most useful of our societies.

This society, as the American had done before it, took action condemning the use of amalgams in dental practice; but the Mississippi did not make it a condition of membership, as the other had done, but it declared the use of amalgams in filling teeth, unprofessional. Several years ago, a zealous effort was made to rescind this action, the advocates of the rescinding action, each and all, declaring that they used but very little of the material, but they wanted to use that little without being regarded as unprofessional. But the action was not changed at that time, and we believe not since. However, that action has no force at present. New processes have been adopted in the practice of dentistry, calling more loudly for amalgams, perhaps, than ever before. Its use is not, at present, a profitable subject for discussion.

The American Dental Convention swept the country like a prairie fire. It was characterized by the absence of restraint—red tape? No. Not even a cotton string to tie the members together. They were as lively as colts which had been confined in training stables, and suddenly turned out to fresh pastures. Its early meetings were profitable, mainly in the way of getting the members of the profession better acquainted with each other. Hitherto the different sections had been more or less jealous of each other. But at the Convention the Eastern brethren found that the Western ones would not try to lasso them all, and that they did not all carry Bowie knives. The Westerners, likewise, discovered that their Eastern friends had joints in their lower extremities, if not, possibly, some in their backbones. And both sections found that their fellow practitioners of the South were friendly fellows, and seldom fought duels more than six days in a week. And besides all these good things, a few good papers were read, and the members indulged in some lively and profitable discussions.

But it seemed to some that the convention afforded too large a law of liberty, and it began to act more and more like a society, and less like a convention. Members found it rather unwieldly. It seemed impracticable to establish anything like a professional basis by it, for it had no permanent members, if members at all, for at each adjournment the members became *non est.*

These considerations and others induced many of the more active members of the profession to take steps necessary to the formation of something more efficient. So at the meeting of the American Dental Convention, in 1859, at Niagara Falls, steps were taken that resulted in the formation of the American Dental Association, at Washington City, August, 1860. This Association has met annually ever since, except in 1861, the President, the now lamented W. H. Atkinson, on account of the war, on advice, postponing the meeting for one year. This was expected to be the leading society, and to a good degree fulfilled the expectations. It is probable that it accomplished more good by encouraging the formation of other societies than by any other way. It appointed a committee to visit different localities for the purpose of encouraging the formation of societies therein. This measure was very successful. Another measure was tried in 1863 at the meeting in Philadelphia. It had reference to the mode of distributing the volume of Transactions; and about it there was an honest diversity of opinion. Some held that it would be best to let all have a copy of the Transactions who were willing to pay for them. Others thought a wiser plan would be to let none buy the volume but members of societies. This was carried. And some societies were formed mainly for the purpose of obtaining the Transactions.

The only unfair thing perpetrated by the writer of this, as now recollected, was on the consideration of this question. The brethren in and about Philadelphia prepared a carriage ride for a number of the visitors during a forenoon. During the absence of the visitors, this question was taken up, and we coaxed the meeting to let it lie till the house was fuller. But its present consideration was forced on us. Fortunately, as we thought, it was not long till the hour of adjournment for dinner. And after dinner there was an "order of the day" that was likely to occupy the afternoon; and in the evening a social meeting was to be held at the residence of Dr. S. S. White, probably; and if we could only work that measure past the noonday adjournment, we could explain at the social meeting the motive for restricting the sale of the Transactions to members of societies only. Accordingly, we got the floor, and spoke against time till the hour of adjournment. After the social meeting we carried our point without any trouble. We never talked "against time" before or since. It resulted in good, but was a mean trick.

Soon the spirit of association (if we may take the language of another) "came down like a thundergust of wood-peckers, knocking the bark off a grove of sassafracs." A half dozen dentists would meet accidentally or incidentally, and one would be elected president, another, vice-president, a third, recording secretary, a fourth, treasurer, a fifth, chairman of a special committee, etc., etc.

But, seriously, nothing in the history of associative effort has equaled this. And that explains the fact that no other profession has such thorough organization as the dental.

But may it not be true that in some respects we "rather overdid it?" Too much strain is hard on the harness. Let actual occurrences illustrate. We prefer to notice incidents "much of which we saw, and part of which we were." It was almost necessary that the managers of the Ohio Dental College Association should meet at the close of the sessions. Naturally this association, as a rule, met in its own building. But the Mississippi Valley Association usually met in the same building; and most of the members of the College Association were members, as well, of the other society. The papers and discussions of the M. V. A. were usually more entertaining than the business details of the O. D. C. A., and if the one interfered with the other, we have witnessed signs of impatience.

These two older societies harmonized past all reasonable expectation; but when the Alumni Association, and the Association of College Faculties were thrown in, to make full count, it seemed like "crowding the mourners." It was well enough, perhaps, sometimes, when individual members could endure the prolonged mental and physical strain. But with a feeble physique and a relaxed nervous system there was likely to be, at least, partial failure. And where the weak made partial or total failures, it is possible that even the strong did not make as complete successes as they would have done under more favorable circumstances. Perhaps we will be better understood by our giving a more definite explanation of our present aim. As a rule, those with whom we have conversed on the subject seem to think that our dental societies are not giving as good results as they once did, nor as good as they can. We have not had the privilege of meeting the societies for some years, and, of course are not able to speak on this from personal observation; but we have an indefinable fear that there is some truth in the suspicion. If there is a backsliding, or a tendency in that direction, we wish to avert the mischief; and if there is no cause for the distrust, we wish to know the fact. We never had the slightest suspicion that the societies would go down if we should cease to attend them. If any one man becomes necessary for the existence and welfare of the societies, or of society in general, he should, forthwith, be embalmed materially, chemically, and spiritually, as to his body, soul, and spirit; for it may be taken for granted that "we ne'er shall see his like again." In addition to these preservative processes, he should be enclosed in thick walls of granite with heavy plate glasses set into opposite walls in order that the discouraged members may look in and draw fresh courage from the sight.

Some claim that the lack of clinics at our societies is a heavy drawback to their success. The question of clinics is a hard one to manage aright. The leading thought with some men, in reference to progress, is, "Let me show you." And the prominent thought with others is, "How do you do it?" When these two classes make up a goodly proportion of the meeting the call for clinics is overwhelming. But large societies are too unwieldly, sometimes, for clinics. An operation within the mouth of a patient can be profitably seen by but few at a time. These few get favorable positions and keep them, while the majority stand about, like "bound boys at a corn-husking supper." At our earliest acquaintance with the dental profession the hands were in advance of the heads in respect to training; and we incline to think they are still ahead. Probably not over a dozen good chemists could have been found among the whole profession. Then we had but few good anatomists; and a few well versed in general and special pathology. And in therapeutics no better conditions were found. A majority in the profession had failed, as yet, to understand the *modus operandi* of creosote, tannin, nitrate of silver, arsenious acid, and were, in the main, content with their lack of knowledge in this direction, and it is doubtful if clinical instruction would have proved efficient here.

When, through the action of recent graduates on the Executive Committee of the Mississippi Valley Association, the *modus operandi* of these remedial agents was proposed for consideration, some of the older members were offended, because "nobody knew, or could tell anything about them." One took offense because such trivial subjects were selected. It would be a waste of time to consider them. For instance, creosote made the toothache stop; and, as for arsenic, "it merely poisoned the life out of the bone; and no more could be said about it."

The scene depicted above illustrates the status of one of the old societies in the spring of 1856, and it is doubtful if the Atlantic slope was in advance of the Mississippi Valley. At all events the first light on the special therapeutics, to which reference has been here made, emanated from the Mississippi Valley Association through the American Dental Convention. See the first article in volume 10 of the *Dental Register*, which was prepared in answer to the program of the M. V. A. and published as soon as ready, in accordance with previous agreement before adjournment.

We have noticed that clinics are not easily managed so as to be profitable to all at society meetings. But as they are so vastly important we can scarcely do without them. Can we not suggest a more excellent way? Fashions change, and perhaps we can gain important information from these changes. Just now INSTITUTES are the rage. One, consisting of several hundreds of young people will meet in this city this evening. Why not try a Dento-Clinical Institute? Agree on a pleasant place for a meeting, not too inaccessible. Let an Executive Committee make all the arrangements, selecting the operators and teachers, and let the meeting last four or six weeks, providing time and opportunity for each expert to display his skill on his favorite specialty. Daily bulletins could be issued giving notice of the days in which Doctor Fitemclose will construct an artificial palate, with similar notices from time to time, so that members of the profession who cannot well spare the time for the entire period, can improve the time for cases in which they are specially interested. We believe the plan can be worked out successfully, so well that an Institute meeting of a few weeks, can be as profitable as a post-graduate session in a dental college.

We do not propose to suggest more than a hint at the details of such a meeting. A consultation of a few who have the health and energy to carry out such a measure, can put it into shape, and give, thereby, a fresh impulse to professional progress.

THE OCTOBER JOURNAL.

We have devoted quite all of this issue to society transactions and have therefore been obliged to hold over material for "Prosthetic Dentistry" and "What We See and Hear" departments until November number. The society proceedings in this issue are interesting, instructive, and well worthy of careful perusal. B.

Societies.

"Wherewith one may edify another."

OHIO STATE DENTAL SOCIETY.

The Ohio State Dental Society holds its next annual meeting in the city of Columbus, on Tuesday, Wednesday and Thursday, Dec. 1, 2 and 3, 1891. No pains will be spared to make this in every way an attractive meeting, and we extend a cordial invitation to members of the profession to be present. Ample accommodations and liberal inducements will be given for the exhibition and demonstration of new and useful appliances, instruments, etc. The geographical situation of Columbus, its extensive railroad connections, make it readily accessible from all directions. Arrangements have been made with the Central Traffic Association for reduced railroad fares on the certificate plan.

Otto Arnold, *Sec'y*, Columbus.
E. G. Betty, *Pres't*, Cincinnati.

MISSOURI STATE DENTAL ASSOCIATION.

The twenty-seventh annual meeting of the Missouri State Dental Association was held at Louisiana, Mo., July 7th to 10th,

1891. The following officers were elected for 1892: President, Dr. Geo. L. Shepard, Sedalia; Vice-President, Dr. E. E. Shattuck, Kansas City; 2nd Vice-President, Dr. J. T. Fry, Moberly; Cor. Sec'y, Dr. Wm. Conrad, St. Louis; Rec. Sec'y, Dr. W. M. Carter, Sedalia; Treasurer, Dr. J. A. Price, Weston. Board of Censors, Drs. C. J. McBride, Perryville; W. H. Buckley, Liberty; DeC. Lindsley, St. Louis. Committee on Ethics, Drs. F. Slater, Rich Hill; E. B. Crane, California; E. W. Bear, Sedalia. Publication Committee, Drs. E. E. Shattuck, Kansas City; W. S. Lowry, Kansas City; W. E. Tucker, Springfield. Committee on Law, Dr. J. A. Price, Weston. Committee on New Appliances, Dr. J. B. Vernon, St. Louis.

The next meeting will be held at Clinton, Mo., the first Tuesday after July 4th, 1892.

WM. CONRAD,
Cor. Sec'y.

Our Aftermath.

OHIO STATE DENTAL SOCIETY, Columbus, Tuesday, Dec. 1st, 1891.

THE RUBBER TRUST, with a capital of $10,000,000, stood a severe strain, but it finally had to break.—*Daily paper.*

ANDREW CUTTER, late of G. W. Fels' Dental Depot, has opened an agency for the Keller Dental Company in Cincinnati.

PROF. A. W. HARLAN, of Chicago, will read a paper at the meeting of the Ohio State Dental Society (Columbus, Dec. 1st, 1891).

BORN WITH A FULL SET OF TEETH.—Mrs. Kate Williams, a domestic, of Houston, Texas, has given birth to a boy baby with a full set of teeth.

COTTON-ROLLS (Ash's or White's), cut into suitable lengths, are excellent for applying local anæsthetics, or other medicines, to the gums, or for use in the Van Bonhorst applicator.—W. H. S.

MARK OFF TUESDAY, DEC. 1ST, 1891, in your appointment book, and go to the Ohio State Dental Society. Dr. Betty is president and that assures a good meeting. Our Illinois friends will be there. Dr. J. E. Robinson, of Cleveland, and others will read papers.

Equine Adaptability.—Cunniff (*the junkman*): "He ain't over han'some, but he's great fer bein' intilligent."

Bregan: "Pfwhat's he doin' now?"

Cunniff: "He has no teeth, so he's chewin' his hay wid his shoes befoor he shwallys it."—*Scribner's Mag.*

A new alloy has been discovered by Herr Reith, of Bockenheim, Germany, which is said to practically resist the attack of most acid and alkaline solutions. Its composition is as follows: Copper, 15 parts; tin, 2.34 parts; lead, 1.82 parts; antimony, 1 part. This alloy is, therefore, a bronze with the addition of lead and antimony.—*Sci. Am.*

The tusk of a mastodon, measuring four inches in diameter, was washed out recently from beneath fifty feet of gravel, at the Starling hydraulic mine, in Jackson county, Oregon.

The manufacture of false teeth for horses is a new industry just opened in Paris with a capital of 2,000,000 francs.—*Public Opinion.*

A Society Woman's Mascot—Worn on Mrs St. Clair's bangle on the right arm was a little ornament, a flower, a marguerite, in white enamel, with one or two missing petals, which, upon examination, were found to be eight little pearly white *teeth* belonging at one time to her two little cupids, who have arrived at the age of cutting their wisdom teeth. Whenever she wore this bangle at a game of chance she was the fortunate winner, and carried home from a progressive euchre party of game of hearts the much envied prize.—*Cin. Com. Gazette.*

A Peculiar Accomplishment.—Miss Flora Staple, of Georgetown, Ohio, twenty-two years of age, has since birth been as helpless as a babe, having no power of motion whatever, except the perpendicular movement of her jaws. Two years ago she witnessed a circus parade. The elephant made such an impression upon her mind that, upon returning home, she told her mother that if she had some soft and brittle substance she could cut the image of the elephant with her teeth. An apple peeling was given her, and she immediately produced the image of the animal. She makes all kinds of fancy figures and letters in this way, and takes great delight in it.—*Daily Paper.*

"Odontunder," for which office rights are being sold in Ohio and Michigan, is, says a Michigan correspondent, a 2 per cent. solution of cocaine with a few drops of carbolic acid to the ounce. It is used hypodermically for the painless extraction of teeth.

A gentleman, while away on a visit, happened to be at a hotel where an "odontunder" licensee was stopping, and, on a banter, sat down in a rocking-chair and had sixteen teeth and roots extracted. He said the operation was painless and without after effect. Judging from the appearance of his mouth alveolar or cutting forceps were used. Most of the teeth extracted could have been saved.—W. H. S.

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—OF—
DENTAL SCIENCE.

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Contributions.

"A word fitly spoken is like apples of gold."—Solomon.

THE THIRTY-FIRST ANNUAL MEETING OF THE AMERICAN DENTAL ASSOCIATION.

Saratoga Springs, N. Y., August 4, 1891.

Reported by N. S. Hoff, D. D. S., Ann Arbor, Mich.

Continued from page 468.

Dr. Peirce read a paper written by Dr. Chas. E. Koch, of Chicago, on

The State Boards, the People's Officers and the Profession.

All agree that dentists should be better educated. National law provides that the several States of the union shall each make its own laws for the regulation of the conduct of its citizens. Accordingly each State has enacted its own law regulating the practice of dentistry. People do not judge a profession by its brightest lights, but by its members in the aggregate. Therefore the people for self protection demand that the standard of dental education shall be sufficiently high to indicate that the possessor of its diploma is qualified and trustworthy. As educators we ought to recognize the fact that the future dentist is to serve the people intelligently and faithfully; and no student should be encouraged to enter the profession who has not the necessary qualification of body and mind and soul to serve the people faithfully in this particular sphere. If this idea was enforced when a student entered college and all through his course he was closely scrutinized, and not graduated until qualified, the diploma of a dental college would have some significance. While the States do not supervise the work done in the colleges, some of them review it by requiring graduates to pass an examination before their State Boards before allowing them to practice. This is an additioal safe-guard for the people, and it is equitable to all concerned. It protects the college which is doing honest work and compels the mere money making organizations to take better ground than they otherwise would. State Boards also exercise an important function in protecting the people from charlatans and tyros. The charge has been made that these boards are generally appointed through political influence and are liable to be incompetent if not corrupt. The writer has never known of an obscure, unintelligent or dishonorable man being appointed to one of these boards. Just discriminations are made between the work done by the large number of competent teachers and that done in schools run by unqualified pretenders on the money basis only. This the profession and the public expect from State boards. The number of dental schools has unreasonably increased during the past few years, and since the standard in some is so low, the people have been compelled in order to protect themselves to establish, at least, minimum requirements. Many think some States have gone too far and require too much. But the fact is in most States the requirement falls short of what it should be. The profession instead of finding fault with the work of these boards should support and sustain them. Recruiting the future dental profession must be done with more circumspection than ever before; and if only qualified men are allowed to enlist, it will be impossible for politicians to appoint unqualified men on examining boards. The mere possession of a diploma, although from a regularly chartered institution, brings no vested right. The people have the right to demand that the professional man who is licensed to practice shall be fully qualified. The writer thinks every State should do so, if for no other reason than that colleges which are doing disreputable work may be exterminated.

It is charged that State examining boards assume greater virtue and knowledge than college faculties. This is not true. State examining boards do not attempt to impart instruction, and they in comparison do only what the county examining boards do for candidates for teachers in the public schools; in this case graduates as well as non-graduates, even of schools maintained at public expense entirely, are subjected to the same examination. If it is necessary to examine the graduates of publicly maintained institutions, how much more is it necessary with graduates of schools maintained and supported by student's fees. The dental profession must support and sustain its State examining boards, if it cares to be considered a respectable profession and have the confidence of the people.

DISCUSSION.

Dr. Crawford: Outside of purely scientific questions, dental legislation is the most important one discussed to-day. In regard to the statement that the people are demanding protection from dental charlatans, I don't think the people en masse are especially interested. The fact is there are not to-day enough duly qualified dentists to serve the people as they ought to be. As to the standing of the profession, no profession is more respected, and its schools will take as high if not better rank than the medical schools. No State should pass a law compelling its examining board to examine the graduates of every school, but the board should be entitled to register the graduates of schools maintaining a proper standard of qualification. The legislature of Tennessee, to a man, when interviewed, expressed the opinion that all reputable colleges should be recognized.

Dr. Barrett: Examining boards do not know what methods teachers have adopted in giving instruction, and it would not be a difficult matter to puzzle and annoy a very bright student and more so a timid or bashful man, although well qualified. State examiners who have never been teachers know little of the difficulties of imparting instruction, and it may be that members of college faculties could embarrass without much difficulty the State examiners themselves. How would it do to have a national board of examiners to examine State boards and college faculties? The college faculties and State boards must be harmonized. Members of State boards should examine the workings of the various colleges, and approve or discredit their work, and then accept or reject their diplomas.

Dr. N. S. Hoff read the report of Section III on Operative Dentistry. The report reviewed the work of the profession during the past year as expressed in the periodical literature, contributions and proceedings of societies, making from these such inferences as were possible as to the general progress in the manipulative branch of practice.

Dr. A. W. McCandless made a similar report on new instruments and appliances, making mention of and exhibiting at the meeting every new appliance or instrument which had been brought to the notice of the profession during the year.

Dr. L. E. Custer read a report on dental pain obtundents and local anæsthetics, and exhibited new appliances for the accomplishment of anæsthesia.

The use of sulphuric ether marks the beginning of the present idea of using volatile agents as obtundents. Dr. Ottolengui suggested and used this agent in 1888. It is applied by means of a spray apparatus which will throw an attenuated spray of ether upon the dry dentine, where by rapid evaporation reduction of temperature is secured, resulting in interruption of normal function; continued use would result in death of the pulp. Nitrous oxide used in the same way is used to obtund sensitive dentine. A difficulty in its use is that a very strong tube is necessary to convey it from the cylinder to the spray apparatus. It is not likely that this agent will become popular because of the necessarily unwieldly apparatus required and the possibilities of damaging results.

Dr. Rhein suggests and has used chloride of methyl for producing low temperatures and obtunding sensitive dentine. It is possible to lower the temperature to 40° below zero with this agent. It has no affinity for water and acts only by lowering temperature. The apparatus for its use is comparatively simple and readily managed. It produces more cold than ether, the pain following its application is briefer and the impression more profound. If inhaled it produces general anæsthesia. It is rather expensive, and smells badly, but it is a valuable agent.

Chloride of ethyl comes from France and is put up in three gram glass flasks or tubes, having an attenuated end, which is broken off when wanted for use and the liquid becomes gaseous and escapes. If this is directed into the sensitive cavity of the tooth it produces insensibility by the rapid evaporation of the fluid. The principal advantage of this agent is the fact that no costly or bulky apparatus is needed for using it.

Another class of agents are desiccating obtundents. Hot air injectors, instruments for spraying the cavity with hot air containing some volatile agent. Of this class of agents only such as use a spray material which has a strong affinity for water are practical or useful, as any anæsthetic property a drug might have ordinarily, is lost in attenuation when used as a spray. A convenient apparatus of this character is the "Small Obtunder." It consists of a small cylinder with a heating bulb and proper points. In the cylinder is a cartridge containing absorbent material, saturated with absolute alcohol. The bulb is heated and the vaporized alcohol is injected from the nozzle into the cavity where it acts by the heat and its affinity for water as a desiccant, and producing an obtundent effect by interfering with the normal function of the nerve fibril. The Milton and Richmond devices are constructed on the same principle and are adapted to the use of various agents, essential oils, etc.; but as these agents have no special affinity for water, they do not produce desiccation and are inefficient.

Local anæsthetics.—New anæsthetics are not as numerous as obtundents. Many nostrums have been put upon the market. Cocaine seems to be the basis of most of them. It is combined with such agents as chloroform, ether, alcohol, carbolic acid, antipyrine, aconite, chloral, etc., etc. Cocaine is a powerful and dangerous drug and is used with the greatest caution, and two per cent. solutions are now generally used when it is injected. Recent examinations of the formulæ of some of these nostrums reveals the fact that many of them are positively dangerous to be used in any quantity and should never be injected into the circulation.

Refrigeration by chloride of methyl, nitrous oxide and chloride of ethyl, is being used as a local anæsthetic with gratifying results. The principle of its action is to paralize the neural activity of the nerve supplying a limited part only. This method of necessity cannot be as effective as injections of cocaine, because of the rapid restoration of normal function by means of the circulation.

Dr. V. H. Jackson, of New York, read a paper on

A Method of Regulating Teeth.

Every tooth should be encouraged to take a correct position in the arch when erupting. At this time because of the small amount of alveolar process developed, the teeth are readily moved if out of position. In the experience of the author the wire crib and springs accomplish this most readily. Impressions are best taken in modelling compound, the hardening hastened by applying small napkins wet in ice water. Use pulverized soap-stone to prevent dragging when the teeth are long. Fill all irregular spaces and undercuts with wax previous to taking the impression. If a tooth is inclined so much as to prevent easy withdrawal of the impression, with a string tie soft compound around the tooth so as to secure such an incline as will allow of easy withdrawal of the impression. Before taking the impression lay over this compound two or three pieces of wet, thin paper to keep the warm compound from adhering to the tooth and its bushing of compound. After removing the impression the compound may be removed from around the tooth and dropped into its proper place in the impression. The paper gives in detail the method of making the wire cribs and springs, illustrating with drawing the different processes. For a complete description the reader is referred to the transactions of the association, as it will be published in full there with the necessary drawings.

The use of copper binding wire in making these cribs has convinced the author that copper has a decided tendency to reduce sensitiveness of the teeth where an appliance comes in contact with parts of the teeth unprotected by enamel; and it is suggested that if copper amalgam put into rubber plates where the plate comes in contact with sensitive teeth will have a desirable effect.

The advantages Dr. Jackson claims for the "crib" system, are, young patients can wear it with less inconvenience than any other form of appliance; additional retaining devices and springs can be readily added at any time. It is easily retained and does not interfere with the articulation.

Two other papers were reported to be read under this section, but for lack of time they were withdrawn by the authors, much to the regret of the officers of the section as they were both valuable and interesting.

For lack of time there was no discussion of any of the papers of this section.

Dr. Frank Abbott in lieu of a report from Section IV, Histology and Microscopy, read a paper by Carl Heitzman and Frank Abbott on

Senile Atrophy of the Upper Jaw.

In advanced age the human organization is reduced in size and weight; the whole body as well as its individual tissues shrivels. The question is where does this atrophy take place? and what are its visible signs under the micrrscope? The upper jaw of a woman who died at the age of 75 years, was placed in a one-half of one per cent. solution of chromic acid for several weeks to soften the boney parts. Verticle sections gave striking views of advanced senile atrophy. The medullary spaces varied in size and were filled with either a delicate fibrous connective tissue, or a granular matter, probably disintegrated protoplasm. The most striking feature was the presence of portions of hyaline cartilage at the same height as the former bony structure, indicating that it had been produced from it and was in a measure replacing it. Hyaline cartilage is present in the lower jaw in embryonal life, but it is supposed the upper jaw is derived from fibrous connective tissue. Hence it seems remarkable to find hyaline cartilage in old age. This is another proof that in old age there is an inclination of the tissues to return to the childhood or even intrauterine conditions. Sections of the case referred to showed a thinning of the epithelial layer, due to the reduction in the size of the cells; possibly some of the cells were worn away by mastication and never reproduced.

The dense fibrous connective tissue is changed into a faintly granular protoplasmic mass, in which living matter is scanty and pale, apparently on account of a hydropic infiltration. This will explain the flabbiness of the tissues in old age and the gradual loss of living matter. Particles of living matter imbibing serum become detached, disintegrate, and are taken into the blood and lymph circulation and carried away, and in this way the shrinkage of the body takes place as new matter is not built up as rapidly as the disintegrating process takes place The blood vessels in old age are very scant. The arteries disappear by a process of thickening and granulation of the different coats which plug the lumen, and the whole is transformed into a solid tract of fibrous connective tissue, and as such is subject to the same process of disintegration as other connective tissue as indicated above. It was not possible to trace the process of the disappearance of the veins in the same way, but it probably occurs much the same. The nerves also undergo the same disintegrating process, but no study could be made upon the axis cylinder of the medulated nerves in this region.

Hyaline cartilage is doubtless a transient or provisional tissue in early life and the same seems to be the case in declining age, since it appears as a mere intermediate tissue between previous bone and ultimate fibrous connective tissue. The bone is absorbed on its periphery by the periosteum, by the formation of new haversian canals in the solid bone and the enlargement of the former haversian system. The borders become corroded and filled with bay like excavations, which contain protoplasmic bodies of various sizes and shapes. Nowhere in the specimen were the multinuclear giant cells of Koeliker or osteoblasts, seen. The origin of the medullary corpuscles is from previous bone corpuscles which have been deprived of their surrounding bone substance. The medullary corpuscles elongate and become fibrous basis substance, with a simultaneous new formation of blood vessels. This new formation if again broken down and carried away as above. On this theory the interstitial growth of bone finds a rational and satisfactory explanation. All tissues arise from protoplasm or its medullary corpuscle, and all tissues return to this embryonal or medullary condition before they are absorbed. Origin and decline show a striking similarity, and that which is between "three score years and ten," is a struggle, and change of the whole person as well as all his constituent parts.

DISCUSSION.

Dr. Hunt: This is a valuable and satisfactory paper, as it presents to us a rational and harmonious theory, not only for the building of the body, but for its destruction; not only the soft, but the hard structures as well.

Dr. Ingersoll; If Dr. Abbott wishes to teach us to grow old gracefully, he certainly has presented us a very attractive theory as to how it is done. We have often wondered what the process of absorption really was. It seems that construction and destruction must be preceded by solution. The temporary teeth afford an excellent illustration. The nature of mature tissue is not the same as embryonic; and I would like to know what takes place in this tissue; do the same processes in modification take place in these structures? I would like to ask Dr. Abbott why the bones of aged people are so brittle, if there is a return to embryonic conditions?

Dr. Abbott: In old age there are fewer cells and the bone corpuscles are infiltrated with lime salts. In the transition of adult to aged bone the process is so gradual, and even in the breaking down at the most active period, there is no actual return to the embryonal condition, but the tendency is always that way and the process is similar.

The next paper was reported under Section V, Materia Medica and Therapeutics, entitled,

ELECTRICITY AS A THERAPEUTICAL AGENT IN THE TREATMENT OF HYPERÆMIA AND CONGESTION OF THE PULP AND PERIDENAL MEMBRANE,

by Dr. John S. Marshall.

These diseases are common in dental practice and difficult to control by the ordinary means at our disposal when caused by caries, injury, mechanical irritation, etc., and much more difficult when caused by constitutional derangements.

Electricity can be used successfully in the first mentioned cases to allay the inflammation, and in the other to prevent suppuration or the formation of new growths, The galvanic current is specially applicable to these cases. The negative and positive currents of electricity can be used to stimulate resorption of inflammatory products and new growths. In my own mouth a near exposure of the pulp was capped and covered with an oxyphosphate filling; congestion of the pulp and toothache ensued, which was relieved permanently by two one-half hour applications of electricity on succeeding days. The positive pole of the continuous galvanic current was applied to the tooth and the negative pole to the carotid triangle. The current was applied gradually and the pain gradually disappeared. Three years have elapsed and the tooth has given no trouble since, and there is no indication of any peculiar sensibility. In one case oj congested pulp in a patient of delicate organization the treatment was used unsuccessfully. Pericementitis not caused by septic poisoning from a devitalized pulp, in many cases may be treated by this method with very gratifying results. The treatment is also useful in hyperæmic, odontalgia accompanying pregnancy; when used in these cases it should be accompanied with rest in the recumbent position and anodynes.

From three-fourths to one and one-half miliamperes are sufficient in the cases mentioned above, the frequency of the application depending upon the severity of the local symptoms and the susceptibility of the patient, and one treatment every twenty-four hours of from 15 to 30 minutes is usually all that is necessary. The Faradic current is invaluable for determing the vitality of the pulp. It is superior to the mouth lamp. Hypersensitive conditions of the pulp may be diagnosed and isolated certainly and expeditiously. The miliampere meter should always be used to measure the strength of the current. The battery, miliampere meter and electrodes suitable for this treatment may be secured from the McIntosh Battery and Optical Co. of Chicago.

Dr. Corydon Palmer was given the floor to make a request of the Association. He said he was grieved and shocked continually at the lavish display of gold in the teeth of people, and he thought it was a disgrace to the dental profession that no more effort was made to prevent this exhibition, and he hoped the members of this association would strive to overcome this objectionable practice.

Another matter which demands our attention is the premature loss of the deciduous teeth. These teeth, even the roots should be kept in place until the permanent teeth are ready to emerge from the gum and supplant them, and he hoped the dental profession would take more interest in this matter and that the wholesale slaughter of these teeth would be stopped.

CLINICS.

Dr. C. A. Timme, of New York, gave a clinic illustrating his method of making a glass idlay. A low fusing porcelain is fused into a matrix made with pure gold, No. 60 foil, by burnishing it with a semi-hard rubber point into a cavity previously prepared with definite borders and no undercuts. The powdered porcelain is then mixed with distilled water so that it will readily flow into all parts of the matrix, and is placed in the matrix with a small pointed brush. The matrix with the porcelain in place is then placed on a little platinum disk which is perforated to allow the flame to pass through it; the platinum serves to prevent fusing the gold foil, and the whole held with a pair of tweezers in the flame of a bunsen burner or lamp until the porcelain fuses and fills the matrix; two burnings are usually necessary as the first shrinks considerably. The matrix is then allowed to cool and the gold foil stripped off and the glass filling is ready for insertion in the tooth. Slight undercuts are then made in the cavity and enough thin cement used to fasten the inlay in place. There will usually be sufficient roughness on the underside of the inlay to furnish attachment for the cement. A variety of shades are supplied with the material so that any required color may be readily obtained. This promises to be a ready and successful method of making these inlays.

Dr. Timme also uses this material for making faces for all gold crowns; this he does by cutting out the face of the crown and soldering in a piece of platinum, which makes a shallow cavity, and into this the porcelain is fused, much as the porcelain onto a watch dial. The material cannot be used on less than twenty carat gold.

Dr. V. H. Jackson gave a clinic on making the cribs and springs used in regulating teeth. An intelligible description is not possible without drawings to illustrate. The apparatus and tools necessary are to be found in almost every laboratory. Plate shears, pliers, soldering-iron, block tin or soft solder, taggers' tin, and piano wire, muriate of zinc. The joints are all made by lapping the wires and wrapping them with narrow strips of taggers' tin, and saturating this joint with the muriate of zinc, applying a good sized piece of solder and melting it at once with the hot soldering-iron. This is all done while the fixture is in place on the plaster cast. Care must be observed to not apply the muriate of zinc until ready to apply the hot soldering-iron as it corrodes the piano wire very quickly and prevents a successful job of soldering. It is a very quick and easy way of making these appliances, and extra springs or retaining appliances can be quickly added at any time.

Dr. Truman W. Brophy treated a case of disease of the antrum by perforating it through the alveolar process with a trephine. The treatment suggested was the usual detergents, disinfectant and curative remedies. The case had been previously treated, but had not been properly trephined to secure free drainage.

Dr. E. A. Stebbins, of Massachusetts, exhibited a patient, a boy, in whose mouth he had treated all incipient caries of both the deciduous and permanent teeth with nitrate of silver, and had successfully prevented the continuation of the decay. The method he has used is to apply to the cavity after removing a portion of the softened material powdered nitrate of silver in the presence of the ordinary moisture of the tooth, or, if the rubber is applied a drop of water is added to dissolve the nitrate of silver and allow it to combine with the tooth structure forming the black eschar which has been so successful in preventing further progress of decay. The Doctor has been practicing this method for three years, and he exhibited a great many teeth in which the cavities he had treated showed no signs of returning caries, while other teeth in the same mouth or even the same tooth in other places not treated was largely decayed. These teeth were all deciduous teeth that he had knowledge of and had watched until they were extracted to make space for the permanent teeth.

Dr. Rollo Knapp, of New Orleans, exhibited some fine specimens of bridge-work, a convenient case for holding instruments and materials for the bridge worker, a new form of bunsen burner, capable of producing any form of flame or any quantity from a small jet to a powerful heat, it is is really a combination of several small bunsen burners attached to a plate in such a way that one or all may be used, a broad or concentrated flame may be had a pleasure. He also exhibited a neat device for washing all blood from the fixtures in a fountain spittoon, and controlling by a valve which is worked by pressing an electric button on the arm of the operating chair the water supply.

The meeting was a large and successful one, but it is much to be regretted that so much time had to be consumed in mere business details and discussions of them and that more was not allowed to the discussions and reading of scientific papers. Many valuable papers were offered and not read, and there was no time allowed for discusiion of many that were read. It is to be hoped that the new amendments offered this year, to the constitution and by-laws, will remedy this serious defect.

The association elected Dr. W. W. Walker, of New York City, President, and will meet next year at Niagara Falls.

TWO CASES OF RETARDED ERUPTION OR SUPERNUMERIES?

BY JAMES HARDIE, MELBOURNE.

Case I.—A short time ago I was consulted by a gentleman about sixty of age, regarding the very loose condition of an entire upper denture, which he had worn with comfort for some years. On examining the mouth I found on the left anterior ridge of the upper jaw a swelling with small white specks in its centre, about the position where the canine should be. Taking a probe and pushing aside the gum I found it was a tooth in process of eruption. On being informed of this the patient desired me to remove it at once, which I did, and it turned out to be a fully developed canine. I told the patient it might be followed by the corresponding tooth on the right, and in about two months after he returned and had the right canine removed.

Case II.—A lady, forty years of age called and asked me to repair her case, a vulcanite upper with central and lateral incisor broken off. As teeth and case both were strong, I said to her that great force must have been employed to fracture it. This she denied and requested me to extract the root of the central incisor. On examining it I found as in the previous case considerable swelling of the gum, with the same white speck in the centre. On pressing aside the gum, the so-called root proved to be a new tooth, she has decided to allow it to remain, and I await the sequel with interest.

DENTAL SECTION OF THE AMERICAN MEDICAL ASSOCIATION.

Reported for the Ohio Journal.

Continued from page 494.

Dr. George W. Whitfield read a paper on the

Pathological Conditions Produced by Galvanic Action Between Dissimilar Metals in the Treatment of Caries of the Teeth,

the following of which is an abstract:

In a general way, let me introduce the subject of the all-pervading mysterious form of vibration we call electricity, for this will be necessary to comprehend the galvanic action produced in the mouth by dissimilar metals. Different qualifying names are employed to designate the kind of electrical manifestations, as magnetic, frictional or static, galvanic, voltaic or dynamic, and thermal electricity.

All molecular disturbances give rise to disturbed electrical equilibrium; all motion tends to produce this condition. We notice the result only when the conditions are such that the equilibrium is not too easily re-established.

Electricity is termed positive (+) when it has an accumulation of electrical force to impart, negative (—) when it will require such an amount of electrical energy to restore the electrical equilibrium. The difference of electrical conditions is termed the difference of potential.

Difference of potential is measured by the unit of quantity of electricity transmitted from the point of higher to that of a lower potential.

The passage of electricity from the point of higher to that of lower potential is termed electrical current, and the bodies along which it passes are conductors. The opposition to the passage of the current is termed the resistance. The unit of current strength, also called the rate of flow or intensity, is the ampère. The unit of electromotive force, also called electrical pressure, or tension, or difference of potential, is the volt. The unit of resistance is the ohm.

Conductors are good or bad as they convey or resist the passage of the electrical current; different metals vary in their conductivity, silver and copper being high in the scale, while German silver and steel retard the current; moisture is a good conductor, while glass, kerite, rubber, and dry air are among the poorest conductors; the resistance varies with the length of the circuit, the conductivity and cross-section of the conductors.

As the current is the same strength throughout its entire length, it naturally follows that the larger the conductors, other things being equal, the less the resistance, and, on the other hand, the less the surface or poorer the conductor, the less the current and reduced activity of the battery. When the current is too great for the conductors the wave length is shortened to that of heat, which varies according to the current and the conductors. The wave length may be shortened to that of light vibrations so that the conductors may glow as in the incandescent lamp or cautery snare.

The current derived from the battery is called galvanic or voltaic, in honor of the experimenters who, less than one hundred years ago, discovered the method of generating and collecting the force through chemical action. It is this manifestation of electrical energy that is employed in the arts, consequently the name dynamic.

Where the extensive use of electricity is required, the dynamo is employed for economical reasons. Batteries consist of positive (+) and negative (—) elements, immersed in an exciting fluid, or fluids. The fluid employed varies according to the construction of the battery and kind of work to be done, being acid or alkaline; though even pure water will generate a current, if two metals are immersed in it, where one metal is more readily oxidized than the other. (Note the fact that action would take place if the elements were composed of two samples of amalgam, if one was composed of less oxidizable metals than the other.)

The positive (+) element of the battery is the one on which the exciting fluid acts; that is, the fluid destroys the positive (+) element, molecule by molecule, while the negative (—) element should sustain no loss of structure. If the negative (—) element is acted upon by the fluid, counter-currents are generated which interfere with the usefulness of the battery.

Now, to apply the foregoing to the battery formed by dissimilar metals in the mouth, where the fluids of the mouth are the exciting media, gold will be the negative (—) element, as the fluids of the mouth have no action on this metal; the positive (+) element is the base metals, whether used separately, as tin, or, as most commonly, the combination of mercury with tin, silver, zinc, and copper, as in the amalgams in use.

With gold and tin to form the voltaic pair, the base metal soon becomes coated, and the current practically ceases; but with amalgam, the mercury performs the same office in the mouth that it does in the laboratory,—it presents the metal in a form that is easily acted upon by the exciting fluid.

We always have good conductors in the fluids of the mouth, containing, as they do, mucus and various earthy salts, while often the fillings touch in the same tooth, or as approximal fillings of gold in one tooth, and amalgam in another.

Resistance varies in each individual case, according to the character of the secretions, or the situation of the fillings.

The action will vary according as the conditions are changed; naturally, where food is left between the teeth to decompose, the acid resulting from such fermentation will form a more exciting media than normal alkaline saliva. Where a filling is left rough and jagged, overhanging and irritating the gums, it presents an exaggerated surface to be acted upon; besides, by irritating the gums, it causes a secretion from them that forms an excellent exciting fluid. This is, unfortunately, the too frequent result of careless operating.

Now, what of all this? Is it only theory? Are these statements founded on scientific facts? Can they be established by proof?

The *Western Electrician* of February 11, 1888, says, in reference to a talk given before the Chicago Electrical Club:

"Dr. Whitfield succeeded in settling a question that has been in dispute among dentists as to the electric action of amalgam and gold fillings in the same tooth, or even in the same mouth.

"That a current was generated by amalgam and gold fillings when placed in water, even when they were insulated from each other, was conclusively shown by bringing a galvanometer into circuit. The point is one that may be combatted, but the evidence produced by the galvanometer cannot be controverted."

Now, if there is galvanic action, what harm can it do? Let us quote from an article on amalgam in the November *Dental Review*, 1887:

"Now the question arises,—Shall we ever use amalgam and gold in the same tooth, and if so, why? and if not, why not? There has been such varied teaching in the past in regard to this subject that it is time the old errors should be exposed and scientific teaching presented to our students of to-day. The old way was to put both amalgam and gold in the same tooth if it seemed necessary, but never to let them touch each other, or grave resuls would follow. After seeing such methods pursued for a term of years we find that, in spite of the teachings, grave results did follow, which ultimately resulted in the loss of the gold filling, while the amalgam remained comparatively sound, or, rather, the tooth structure surrounding the amalgam filling."

This is correct, but let us review the writer's following statements:

"We have found that if the two metals touch in the electric battery there is no longer a current,—it is dead, no shock is produced, and it is just the same when the metals are in a tooth in the presence of an acid as it is out of the mouth in the laboraatory. Therefore, we found, first from an unpleasant experience and later from theory, that if amalgam and gold are placed in the same tooth they should have an uninterrupted communication, should be in complete apposition, so that no electric or galvanic action can take place because they touch each other."

Let us consider these statements and see if they harmonize with the laws of physics. Now, if the elements touch (the fillings) there is practically no resistance in the circuit; consequently, the battery's action is most violent, up to the capacity of the battery to generate current.

The writer says no shock is produced. He is right; the current flows evenly through the short circuit, so the equipoise is practically maintained, and shock is produced only when the current is interrupted, when an accumulation of energy is suddenly discharged.

Let me try to point out what has misled my friend into making these erroneous statements:

If gold and amalgam touch in the same tooth there is practically less destruction around the gold filling. This is easily explained, as the galvanic action is so violent that the surface of the amalgam filling is soon destroyed; that is, all the baser metals are consumed from the face of the plug, leaving the silver, gold, or platinum of which it is composed on the surface, which practically changes the amalgam to nearly a silver surface, thus raising it to nearly a negative metal, while, besides this, the coating protects even the surface of the silver.

This statement holds true with regard to very old plugs of amalgam; their surface is no longer amalgam, it is negative metal.

But at what fearful cost are such old fillings raised to the dignity of negative elements!

Let us now note some of the harmful phases of this subject.

First, galvanic action has a tendency to accelerate the blood flow, producing hyperæmia and hyperæsthesia, and in some cases violent nervous phenomena. This is especially the case where, from the situation of the fillings, the energy is accumulated, then suddenly discharged, producing shock, as each can demonstrate by touching a bit of zinc or the blade of a penknife to a filling in your own mouth.

Secondly, the current is generated from all parts of the elements that come in contact with moisture and are not protected by a coating. The portion of the amalgam filling that are protected by tooth-structure become so coated that there is practically no action except on its exposed surface; on the contrary, gold remains bright on all its surfaces, and, as moisture pervades the whole tooth, no matter how well the filling is inserted, moisture will reach it by way of the intertubular spaces; consequently electrolytic action can take place from all portions of the gold element, naturally causing considerable destruction around the gold filling. And this is not all. Among the commonest elements found in the mouth is chloride of sodium (salt); galvanic action readily breaks up this compound; the chlorine liberates oxygen and unites with the hydrogen of the water, forming hydrochloric acid, leaving the oxygen in its most active state. Other acids may be formed in this way, such as sulphuric, nitric, etc. The electrolytic action and the acids thus formed are sufficient to roughen the surface of the teeth to give lodgement to colonies of "microbes."

Chlorine in its nascent state will readily unite with the mercury of the amalgam, and the chlorides of mercury may be formed in sufficient quantities to produce symptoms of mercurial poisoning in those susceptible to its influences; these salts of mercury may also explain the immunity from decay of teeth stopped with ill-fitting amalgam plugs, the germicidal effects of the mercury being sufficient to prevent colonization by micro-organisms, and consequent destruction of the tooth.

The oxygen might, from peculiarities of the individual case, unite with other salts than those of the teeth, and the same with the acids. We all know that the neglect some mouths get would be total destruction in others. The elements that usually produce decay seem to be inert in their case, and the same condition undoubtedly explains why electrolytic action that would destroy in one case is apparently harmless in others, although such cases are in the minority.

The usual result of placing amalgam in the back teeth, while gold is placed in the front teeth, of children, will explain why the gold fillings have to be renewed so often; also, that in the electrical action is a clue to the oft-repeated tale brought us by the laity that amalgam stands better than gold, as the amalgam still remains, and the gold fillings, that have been replaced several times, are loose again.

If amalgam must be used, use those grades that will readily become coated, as the coating will reduce the galvanic action, protecting the plug from the fluids of the mouth, except where attrition and brushing keep them bright. Gold and amalgam—in fact any metal—should be avoided for teeth that are of such soft structure that the pressure produced in inserting gold would tend to break down the tubuli, while metals never stand well in teeth of very soft structure; in fact, you can as soon expect to prevent water flowing under the edge of a board resting on the ends of the blocks in cedar-block pavement in the street as to expect to exclude moisture from a soft tooth with a metallic filling, as moisture is bound to penetrate between the tubuli. Even the normal plasma exuding from the tubuli will have a tendency to assist the destruction of the hard structure when it becomes vitiated, as it must in the temperature of the mouth, as it is as foreign a substance when lost from the tubuli as is the blood that weeps from abraded tissue.

The cements and gutta-percha are the only filling-materials that should be used in such teeth. If you will use these materials, in the course of eighteen months or two years the tooth will be found quite hard and capable of proper manipulation to prepare it for the king of metals and the king of filling materials, —gold. A tooth treated in this way will not be as sensitive, and the fillings will last.

DISCUSSION.

Dr. J. L. Williams thought galvanic action occurred to a greater degree in amalgams containing zinc. He suggested combining gold foil with the amalgam making it more similar to a gold filling.

Dr. J. S. Marshall spoke of the experiments of Dr. S. B. Palmer, of Syracuse, made some years ago, showing this electrical action, and that he proved that when an amalgam filling became thoroughly oxidized, galvanic action ceased. It was only where the filling remained bright that the action continued.

Dr. L. E. Custer said that according to this those amalgams that discolored most were the best.

Dr. Whitfield said amalgams that oxidize most are the best. That zinc never thoroughly oxidizes.

Dr. John S. Marshall next read a paper entitled,

The Rheumatic and Gouty Diathesis as Manifested in Diseases of the Peridental Membrane.

The following is an abstract:

In nearly all our text-books on dental surgery and dental pathology, mention is made of the fact that rheumatic and gouty individuals sometimes suffer from irritation of the peridental membrane, causing the teeth to become more or less sore and loosened in their sockets; supposedly the results of the peculiar diathesis of the system, but further than this no light is thrown upon the subject.

Clinical and post-mortem experience teaches that the *materies morbi* of these diseases has a predilection for the fibrous structures of the body, especially the synovial membranes, the aponeuroses of muscles, the dura-mater, the cardiac tissues, periosteal and peridental membranes. The one most commonly affected is the synovial membrane, resulting in inflammatory conditions of the joints.

It not uncommonly happens, however, that there is associated with the inflammatory phenomena of the joints, enlargement of the long bones and nodular formations in other localities; and in the cementum and pericementum, conditions which are somewhat analogous.

The predisposing and exciting causes of certain irritative conditions of the pericementum seem to have their origin in the same conditions which bring about the phenomena of gout and rheumatism, and they have also proved by experience to be amenable, in many cases, to the same specific taeatment adopted in these diseases. This last fact has led me to the belief that the rheumatic poison is largely accountable for many of the diseased conditions of the pericementum, and has induced me for several years to make close and careful observation in relation to the prevalence of irritation of the pericementum in gouty and rheumatic individuals.

This belief has been further strengthened by finding, upon analyzing the urine of a number of persons suffering from peridental irritation of this character, that there was a considerable excess of uric acid in every case. The saliva, also, in many cases gives a decided acid reaction.

The peridental membrane seems to be very susceptible to the irritating effects of an acid condition of the blood, whether from an excess of latic or uric acids retained in the system or from the ingestion of such acids as are found in sour wines and malt liquors.

The habitual use of sour wines and malt liquors often results in peridental irritation of a marked character in individuals who have never developed symptoms of a rheumatic condition; while on the other hand the same irritative conditions are found in total abstainers; but these, it would seem, are due to rheumatic phenomena, and are often the forerunner of an approaching attack of acute articular inflammation.

Congestion and thickening of the peridental membrane and temporary loosening of the teeth, accompanied with dull, gnawing pains with more or less soreness, are a common occurrence in rheumatism and gout. At times this condition is the first definite symptoms to be manifested of an approaching attack of acute articular inflammation, while in others it does not make its appearance until after the first acute symptoms have subsided and occasionally it is the only manifestation of this peculiar diathesis.

Chilling the surface of the body, or in other words, taking cold, is usually the exciting cause of an attack, while an injudicious diet greatly aggravates it.

The presence of concretions upon the roots of the teeth is the most common cause of inflammation of the pericementum, and it has been generally supposed that these concretions were formed from the saliva.

It is my purpose to call attention to what seems to me to be a more rational explanation of the formation of these deposits in locations where the saliva could not, or could with great difficulty, reach. The saliva contains, as waste products, a certain amount of phosphate and carbonate of lime which has been rendered soluble by the action of carbonic acid. A certain amount of ammonia is given off from the lungs as a product of decomposition of tissue; while fermentation of alimentary debris lodged about the teeth also furnishes an additional amount of ammonia. This ammonia, coming in contact with the saliva in the mouth, unites with a portion of the carbonic acid to form carbonate of ammonia, thus liberating a portion of the calcium, which is thrown down in the form of a precipitate and lodges upon the exposed surfaces of the teeth. But when deposits occur at remote points from the gum-margin, it does not seem possible that this is the correct explanation of their presence in these locations. The law of gravity carries all bodies that are heavier than the medium in which they are suspended downward; consequently we must look for some other explanation for the presence of the deposits on the roots of the superior teeth.

It has been suggested by Dr. Ingersoll, of Keokuk, Iowa, that these concretions were a direct deposition from the *liquor sanguinis* which bathes the roots of the teeth during the suppurative stage of the inflammatory process. This may be the correct solution. It is true that calcareous material is sometimes deposited from pus, in proof of which might be mentioned the fact that the roots of teeth penetrating the antrum of Highmore and foreign bodies located in this sinus during suppurative inflammation have been found when removed to be covered with calcareous deposits, but that this is a common occurrence in suppurative conditions in any locality admits of serious question. I am of the opinion, however, that the deposition of the concretions upon the roots of the teeth in those localities not readily reached by the saliva, or in which the presence of the saliva would be an impossibility, are due to the causes which produce the chalky formations found in the joints and fibrous tissues of gouty and rheumatic individuals.

The thought has occurred to me, though I have not had time to demonstrate it positively, that the concretions found upon the roots of the teeth in the locations just named were masses of urate of soda with phosphate and carbonate of lime, and that they are deposited directly from the secretions, as is often the case in rheumatic arthritis. Furthermore, it would seem that these concretions were the cause of the inflammatory condition, rather than the result of it.

Dental exostosis, or hypertrophy of cement tissue, is an occasional occurrence in individuals of a gouty of rheumatic diathesis. It is most commonly found in chronic cases of long standing and is often associated with enlargement of the joints.

The causes are in all probability the same as those which produce the enlarged joints. Chronic irritation of the periosteum tends to hypertrophy of bone; while the same condition of irritation in the pericementum produces hypertrophy of the cementum. The history of these cases is usually one of chronic irritability of the pericementum, with periodical attacks of soreness and looseness of the teeth, while the cause of each attack is generally referred to some recent exposure in which the individual has taken cold. The acid reaction of the saliva and the urine at these times gives evidence of an acid condition of the blood. This would seem to indicate the cause of the irritation and suggest the line of treatment to control the immediate symptoms and the prophylaxis of the future.

Phagedenic pericementitis is sometimes directly traceable to a rheumatic condition of the system or the uric acid diathesis. In several cases in which I have analyzed the urine, uric acid was found largely in excess of the normal quantity.

In all of the cases which I class as rheumatic, concretians are found upon the roots of the teeth, and many times in locations which preclude the possibility of a salivary origin.

Under a restricted diet in which meats, wine, and malt liquors are cut off there is soon a marked diminution of the quantity of uric acid excreted, and an equally marked improvement takes place in the symptoms manifested in the oral cavity, which cannot be accounted for by the removal of the concretions and local treatment alone.

DISCUSSION.

Dr. Whitfield cited the case of a lady who had perfect teeth, but was afflicted with recurring trouble with the gums, which became raw and suppurated. She was of decidedly rheumatic diathesis, and the trouble about the teeth would coincide with the manifestation of rheumatic trouble.

Dr. Taft said the deposits between the tooth root and the tissues around it are found in various forms, usually more dense than ordinary salivary calculus, always darker, though they rarely become black as salivary calculus sometimes does. The tissue does not unite over it, and if it remains it will cause disease of the gums. He thought that it came from the liquor sanguinis. How the deposit first occurs is not easily understood. It appears to be a sequence to a diseased condition, and when it begins to be deposited it causes irritation. It forms a pocket where matter is retained which becomes more and more vitiated.

The deposit must be removed before a cure can be effected, and this must be done by instruments or by the extraction of the tooth or teeth affected. The system may be improved by appropriate remedies, but this will not remove the deposit. Sometimes it is very difficult to remove it. If there is a pocket running down, the deposit may be removed by an instrument; but where there is no pocket or where the deposit cannot be reached, the tooth will have to be extracted. He had seen an extracted molar that had the space between the roots filled with this deposit. It had been treated by a good operator, a man well qualified to handle any case, but the tooth had to be extracted. What else can we with such cases? Is there anything that can be done in the way of prophylaxis? What is the incipient indication of trouble of this kind?

Dr. Whitfield said that in the case he mentioned there was no deposit, only recurring inflammation, and asked whether this disease attacked pulpless teeth more than those with living pulps.

Dr. Marshall had never noticed that pulpless teeth were more or less liable to attack than others. The concretions are found at the ends of the roots, with no opening to the edge of the gum. He spoke of one case where cementitis appeared to have been caused by reflex influence from malposition of the uterus. He said that diabetes mellitus and albuminuria will cause so-called pyorrhœa alveolaris, but no concretions on the teeth. These concretions were the cause of the inflammation and the result of the gouty or rheumatic diathesis. He had not been able to demonstrate by chemical analysis whether they were made up of uric acid and lime-salts, but the next case in which he had to extract a tooth he would submit it to a chemist and have an analysis made of the deposit. Many cases never go on to the secretion of pus; most of them result in exostosis. Those which go on to the formation of a pus-pocket are few when compared to those which result merely in thickening of the membrane and exostosis. He had found that putting patients on a treatment of salicylate of soda would benefit the mouth, and it was this fact that called his attention to the origin of the trouble.

Dr. J. Taft then read a paper on

The Care of the Teeth.

A short discussion followed this paper, after which the meeting adjourned to meet next year at Detroit, Mich.

Prosthetic Dentistry.

[This department will be devoted exclusively to Prosthetic Dentistry, including Crown and Bridge-Work. We shall be pleased to receive from our readers such practical contributions, hort items or queries upon this subject as they choose to contribute.]

GOLD CROWNS.

BY APPLEBY KING, L.D.S.I., MARGATE.

Those who would put on a gold crown quickly and well may succeed by following these directions. Take a piece of thin wire (not too thin), and then with a pair of pliers twist it round the stump to be operated upon, then slip it carefully off and paint it black; now take a piece of stick of some hard wood, something like a rivetting hammer handle, selecting the stick according to the size of the band you require, put it in the vice now while the paint is wet on your shaped wire ring describing the exact shape of the stump, place it on the top of the stick you have in the vice and give it one sharp blow with the flat end of a good sized hammer, take away your wire, now shape your piece of wood carefully and accurately as the dark mark guides you, until the whole of the dark line disappears, mind you are inside the line, but do not go too far; now make a ferrel of coin gold for the top of your stick, polish and finish on the stick, then take it off and try it on the stump, and you find it a little too small to go on, take a sand-paper disc, and with the engine rough it all round and make it fit on "slic," this being done place your ferrel again on the stick and make another ferrel to fit over it, as you would proceed to make a lid to a box. Now you have a telescope joint; take off your second ferrel, or collar, and fix on the stump with osteophosphate, having arranged your gold crown to the articulation with strong wax, remove it, and solder your second collar on the crown and polish, fill your gold crown with copper stopping, and then, as a lid fits on a box, your patient bites the crown into its place, and remove it if you can. In fitting porcelain teeth for the front in this way, the great trouble will be in getting the pin in the proper position. Drill out the nerve canal, proceed as before, when you have your first collar on, fit your pivot *in situ*, and cut a small piece of platinum gauze the shape of the collar, and drop it inside, touching the pin, force in some resin wax, and bring out the gauze adhering to the pin, now set it in plaster and powdered pumice and flush some solder over to fix the pin, then a piece of gold plate, having made your second collar, solder the gauze now filled in with plate, and solder to collar No. 2; on this arrange your porcelain tooth in the mouth, and solder it to second collar; your first collar now being fitted to the stump press it all into place with osteophosphate.

EXPRESSION IN ARTIFICIAL DENTURES.*

BY T. J. JONES, L.D.S., VICTORIA, B.C.

It is a noticeable fact that with a large proportion of our patients the appearance of an artificial denture is the subject of more solicitude than the difficulty to be experienced in mastication or the prospect of trouble in wearing. That this is especially true as regards our lady patients, few in the face of experience will have the audacity to deny. Bearing this in remembrance, it is surprising with what utter disregard of the rules of expression so large a number of artificial dentures are made at the present day. With many practitioners the same model is followed in the arrangement of the teeth, only the shape and size are determined by the requirements of the case, while some ignore all discrimination even in these particulars, and insert teeth of the same shape, size and pattern in each and every instance.

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* Read before the Washington State Dental Society, at Tacoma, 1891

It is a profitable and interesting study to consider the relation of each tooth or class of teeth in their normal arrangement. One's work will give evidence of artistic improvement to be thereby gained. The expression, shape and size of the teeth may be studied with advantage in connection with the subject of temperament. With patients in whom the bilious type prevails we shall find require the dark or bluish tint, and long, narrow shape, not so strongly marked in this latter particular, however, as in the purely nervous temperament, where the teeth are almost invariably narrow. Whether dark or light in shade, where the sanguine temperament prevails, the length should be less marked in relation to the width, and the shade should approximate to a white with a yellowish tinge. The lymphatic patient usually requires a short, broad tooth, though in a few cases of this type we observe the natural teeth longer and not so broad, presenting the appearance attributed to those of the sanguine temperament. The color is white, often chalky, but sometimes showing that pearly gloss and glistening enamel peculiar to young lades of a scrofulous habit, who may be classed as having a temperament of their own.

Considering the arrangement of the teeth, we need devote but little space to suggestions concerning the central incisors, mere instinct, should judgment be wanting, would seem capable of arranging these teeth properly. It may be remarked here, however, that the leaving of a little wider space between them than is presented between the other teeth, tends, I think, to lessen their artificial appearance. Their cutting edges should of could be on a line with each other. To the lateral incisors belong more of the responsibility of a perfect expression than is generally accorded them. The peculiar cast of the countenance will assist us in the arrangement. Should the face be markedly thin the best result will be obtained by throwing the laterals slightly in. If it is noticeably round and full they may set directly up to the line of the centrals, and at times a little in advance. The body of the tooth may project, if the cutting edge does not, thereby obtaining the desired expression of fullness. The canines in the sections manufactured for vulcanite base are lacking in the prominence which a natural expression demands. Could the body of the tooth be thrown out and at the same time twisted so as to present more of the mesial surface to the eye, the improvement, I think, would at once be apparent. In setting single teeth, when these details can be carried out we may throw the neck of the canine a little back towards the bicuspids, giving it more hang or draw than is observable in the sections, and with a better effect. In a majority of cases the intensely artificial appearance presented is owing to a too great projection of the bicuspids. As sections are now manufactured, if we set the gum surface of the front and bicuspid blocks perfectly even with each other they will be found altogether too prominent, giving that peculiar ghastly appearance so often complained of, and at once stamping the work artificial. The twist of the canines mentioned above would tend to remedy this defect by partially concealing the bicuspids; but as this is not attainable it is my own practice, and I believe the preferable one, to set in the bicuspids blocks regardless of the jag or shoulder thereby produced. The molars may be said to naturally gravitate to their own positions. It is, however, a common practice, especially when an entire set is beng constructed and there are consequently no natural lower teeth to serve as a guide, to make the upper molars too long. In the natural arrangement we often find them considerably shorter than the bicuspids, the cutting edges of the teeth, from the second molar to the lateral, occasionally describing quite a curve. We also find the molars so inclined that the inner cusps are considerably lower than the outer. In artificial dentures the reverse is often the case. With regard to the lower teeth I may remark that they are so little exposed to view, in comparison with the upper, that much less difficulty is experienced in securing their correct expression. Excessive length of the six oral teeth is, however, sometimes met with a slight crowding of the incisors, producing a remarkably natural appearance, but in the employment of sections it is of course impracticable, and when single teeth can be used I should set them regular. A word of warning concerning the selection· We should bear in mind the fact that the teeth will appear white when placed in the mouth in contrast with the red color of the lips and the darkness of the mouth generally. It is the univeral experience that our lady patrons are prone to desire teeth of a much lighter shade than a natural expression would possibly admit of. In yielding to their wishes in this respect we shall in the end do ourselves more injury than by following the dictates of our own judgment at the risk of incurring their temporary displeasure.—*Pacific Dent. Jour.*

A NEW REGULATING DEVICE.

The following contribution to the list of devices for correcting one of the more frequently occurring forms of dental irregularity may be found useful. I have obtained very satisfactory results with it in the two cases where I have used lt. The object to be accomplished in both of these was to move the incisors outward for the purpose, in the first instance, of increasing the size of the upper arch, and in the second instance, where the upper central incisors closed inside of the lower incisors, of correcting this defect.

The appliance is constructed as follows: A broad clasp of platinized gold is thrown around each of the sixth-year molars, the opening of the clasp being at the disial buccal angle of the tooth or on its distal approximal surface. These clasps are yoked together by a narrow silver plate simply to give solidity to the fixture and cause the two molars to act as a single abutment. Upon the buccal aspects of each molar clasp is soldered a section of gold tubing about three-eights of an inch in length; the tubing used is the hinge-tubing of watch-case makers. The distal end of each tube is closed with a drop of gold solder. When the appliance is thus far completed, it is placed upon the model and and a section of piano wire bent to conform to the arch, impinging upon the buccal aspect of the teeth about the middle of their crowns. The length of the piano-wire spring and the relation of its curvature to the labial aspects of the incisors is made such that its form will be that which the arch of the anterior teeth are to take and permanently retain, or, in other words, the wire is to be bent to the form of the arch which it is desired the teeth shall form when the correction is completed.

The wire will now have approximately a U shape. The free extremities of the wire are to be cut to the proper length, so that when introduced into the tube-sockets with the fixture in position in the mouth the arch of the U will stand nearly one-quarter of an inch anterior to the incisors and at about the middle of their crowns. After the fixture is adjusted in the mouth, the teeth to be moved outward are to be firmly ligated to the piano wire by means of fine gilling-twine or silk. The especial advantages of this fixture are that it is cleanly and easily removable for readjustment or cleansing. The traction force is exerted directly outward in the median line, or if desired its direction may be modified by tying the ligature to the wire on either side of the tooth to be moved. The amount of force exerted is absolutely under control, and may be modified at any time by changing the length of the legs of the U-shaped wire, or by using a wire of smaller diameter, or by the method of tying the ligature to the wire.

Not the least important advantage of the appliance as described is, that by having proper regard for the curve of the spring and length of its sides in relation to the curvature of the corrected arch, the fixture becomes practically automatic from the fact that the limit of resilience of the spring is reached at the moment the irregularity is corrected. Consequently, when the work of correction is done, the spring ceases to act. I have found much satisfaction in the use of electro-gilded piano wire, not only in the cases deccribed, but wherever I have occasion to use piano wire in regulating teeth. The deposit of gold is amply sufficient to protect the wire from oxidation during a reasonable time while in use in the mouth, and the unsightly staining of the teeth by iron salts is thus avoided. The gold surface is also an advantage when it becomes necessary to unite lugs, loops, or other fixtures to it by means of solder.—Dr. Edward C. Kirk, *Cosmos.*

LABORATORY HINTS.

Care of Impression Cups.—What can be more disgusting to a refined lady than to have a dentist introduce into her mouth an old battered, dirty impression cup; loaded with twice as much plaster as is necessary ?

I have worked with several dentists who would always slip up behind their "victim" and manage (if possible) to sneak the cup into their mouth without letting the patient see it. The cups can be kept just as clean and smooth as when they came from the depot; but, to do this, it is very important they should be kept free from dents, scratches, and bruises. When altering the shape of a cup to fit some peculiar mouth, do not hammer it or use pliers, as any change can be easily made with the fingers. When pouring the cast, do not tap the bottom of the cup with the spatula, or anything that will jam it; get a rubber face door bumper, screw it into the plaster bench, and tap the bottom of the cup on this. As soon as the impression is removed from the cup, wash off thoroughly with a stiff brush, sapolio soap, and soft water; wipe dry, then wipe over with silver-cleaning rouge, mixed to a paste with water, take it to the lathe and hold it on the cotton wheel a few minutes to bring out the polish.

Making Corundum Wheels.—It is a simple matter for a dentist to make his own corundum wheels, and, by so doing, have a fine assortment of wheels at a small cost. Patterns will be needed for the different sizes; these patterns can be turned out of soft wood; be sure they are true, and have them smooth; to prepare them for molding, dip them into hot, melted paraffine, let them cool, and polish with a piece of chamois skin. To make the mold, place the pattern on a piece of plate-glass, put a rim of cardboard around it, deep enough to reach one-half inch above the pattern, and large enough to clear it an inch on all sides; with sticky wax secure this rim tightly to the glass, then mix plaster to about the consistency of cream, hold the glass by one corner in the left-hand; with the right pour the plaster slowly into the opposite corner, shaking down gradually toward the left-hand; this should be done carefully, to get a perfect mold. When the plaster sets, turn it over, remove the glass and pattern, dry the mold, and it is ready for use. Melt over a slow fire half-pound of shellac; when thoroughly melted and mixed, add four pounds of corundum, fine, medium, or coarse, as you desire the wheel; stir until the corundum is evenly distributed through the shellac; pour into the plaster mold till as full as it will hold; then take the piece of plate-glass, which should be warmed and smoked on one side, press it, smoked side down, on the mold, forcing out all surplus material, place a weight on the glass, and let stand till cold.

To True Corundum Wheels.—The following is old, but I think it might be new to some of the younger readers of the *Items:* When wheels have become hollowed or dished on one side, place them, this side down, on a piece of *plate-glass*, then hold the piece of glass over a lamp so the heat will strike the glass under the center of the wheel. When the wheel has softened so it will settle smoothly to the glass, remove the glass from the heat and put it in a cool place, where the wheel will set quickly. This work must be done very carefully so the wheel will not overheat and run out of shape.—Dr. Wm. H. Steele, *Items.*

TEMPORARY SETS.

In making temporary sets of teeth immediately after extracting, it is much the best plan to insert the six or eight anterior teeth into the gum, where the natural roots were, to a depth of about one-third of their length. Set in this way they look more natural, first, last, and all the time, and fit better the gums have shrunken to any considerable extent. It is, however, very difficult to decide precisely where to cut into the cast for the insertion of some of the teeth, as the loose edges of the gums turn inward and obscure the outline of the alveolus when the impression is being taken. This can be partly remedied by trimming away such parts of the gum as will be too much in the way. Sometimes the prominent points of the alveolus must also be trimmed to allow a satisfactory adjustment of the teeth. All the foregoing is "old" in my practice. The next step is new. After trimming gum and alveolus, take rolls or pellets of softened wax of same diameter as that of each tooth or root, and insert nearly half way up the socket, and cut off one-fourth of an inch from the edge of the gum, and, while thus in place, take the impression with plaster in such a manner that each piece of wax will come away with the plaster. Where the wax has been pressed into the alveolus further than we wish to insert the teeth, the points must be trimmed away so they will make sockets in the cast only as deep as the teeth are to be inserted. When this is done carefully, the teeth will fit accurately into the gums, and not impinge on the process an any point, as they are very likely to do without such a guide for their adjustment. This plan is best for lower sets sometimes as well as upper, if the gums protrude badly. Where a single tooth is to be inserted between two long bell-shaped or flaring teeth, immediately after extracting, it is much better to place a piece of wax to fill the gap, so as to come away with the plaster impression. This overcomes any objection to plaster for such impressions, and nothing else is so reliable for the purpose. The depth in which the teeth are inserted into the alveolus will influence the amount of shrinkage that will take place in the gum and alveolus. If inserted quite deep, the length and prominence of the gum will be diminished, someting at times very much to be desired. Or, if little or no shrinkage is desired, then gum teeth should be used for the temporary set. It is better there should be no temporary set than to have such hideous sights as are sometimes presented.—Dr. W. E. Driscoll, *Items.*

To clean wax get any old tin or skillet, put all your waste bits of wax, cards from artificial teeth into it, put a couple of inches of water in to keep the wax from burning, boil till all the wax is melted, then pour a pint of hot or boiling water into a washbowl or other suitable vessel, empty the contents of the skillet into this and let it stand till next morning. All the sediment will have gone to the bottom. Scrape this off, and should the wax not be clean enough, repeat the same process, only this time add a teaspoonful of sulphuric acid to the melted wax before pouring; this will make the wax clean and yellow, as when first made by the bees. It will not do to pour it into cold or even warm water, it must be either hot or boiling. If the above directions are carefully followed, there is no wax so dirty but what may be made just as good as ever. Wax can be toughened by adding either resin, Burgundy pitch, or, what is better, Venice turpentine.—Dr. D. V. Beacock, *Dom. Dent. Jour.*

OBTAINING THE BITE.

Dr. W. Goodfellow, of Sussex, New Brunswick, writes us that a process which never fails to secure a correct bite in articulating artificial teeth, is to direct the patient to open the mouth and then to see that the tongue is placed firmly against the roof of the mouth, *well back*, and held there while closing it. In this position it is impossible to advance the lower jaw.—*Dent. Adv'r.*

CORUNDUM WHEELS.

Keep your corundum wheels wet with water containing a few drops of alcohol. If they have become gummed, soak in a solution of caustic potash, afterwards washing in weak alcohol. The treatment is old, but none the worse on that account.—*Odont. Jour.*

Save up all your old waste bits of lead and other soft metal. Melt into a round or square block by pouring into a collar-box or other similar mould. Very useful for striking up gold caps, etc. —Dr. Beacock, *Dom. Dent. Jour.*

Editors' Specials.

"Write the Vision and make it plain."

CHEMISTRY? IS THERE SUCH A SCIENCE?

An intelligent man denies that chemistry has anything to do in the formation of material substances. He insists that its work is solely destructive. It takes apart compounds, but has no influence iu their formation. He believes in chemical analysis, but denies synthesis.

Another class seems not to know or care about the existence of such a science. Compound substances are formed, and the members of this class rather think their formation is due to the action of minute organisms called microbes. perhaps.

It is well to bear in mind, however, that compounds that we have hitherto called chemical are always definite in their nature. For example, water is composed of hydrogen and oxygen, sulphuric acid, of oxygen and sulphur, etc. So definite are they that they can be composed of no other ingredients. On the top of the mountain, and in the dell water is water, composed of oxygen and hydrogen, and these are not mechanically mixed, but in combination, so that to appearance a new substance is formed.

If there is such a science as chemistry the above sentence is its first law of combination, that is, chemical compounds are definite in their nature. As water, wherever found, whether solid, liquid or gaseous, is always found to have the same constituents, there seems to be a law determining the same; and by further research it is found that all compounds are definite in their nature.

And, it may be added, that compounds are constant in the ratio of their elements. Water is always composed of oxygen and hydrogen, and these elements are always in the proportions of eight parts, by weight, of oxygen to one part of hydrogen. By further investigation it is found that each element, in the formation of compounds, unites with other elements by laws as definite as those governing oxygen and hydrogen in the formation of water.

Hence we have found two laws, viz.: Chemical compounds are definite in their nature, and they are constant in the ratio of their elements. In millions of cases, it is found that neither of these laws is violated. It seems as if there were a force or principle that acts as if elements were choosing their companions, and by agreement this principle is called affinity, sometimes chemical affinity. And the science which has to do with this principle is called chemistry. Two sciences enable us to know all that we can find out about matter. The one is natural philosophy, or physics; and the other is chemistry.

The two fundamental laws already alluded to demonstrate the existence of such a science, but let us see if there are not other laws going still further, in proving such existence.

The ratio of union between two chemical bodies is the ratio of their union between other bodies. For example, eight and one express the ratio of union between oxygen and hydrogen, to form water. It was common to say, in the former nomenclature, that these numbers were the combining proportions of these elements. The term equivalent is more convenient than combining proportions. Nitrogen, another gaseous element, has for its equivalent, about fourteen. Oxygen unites with it in the proportion of eight to fourteen, to form nitrous oxide. Calcium, a white metal, combines at twenty, and eight parts by weight, of oxygen unite with twenty of the metal to form lime.

And it is ascertained that there is another law as peculiar as those already considered. When one element unites with another in several proportions, these bear a simple relation to each other. For example, oxygen combines with nitrogen in several different proportions. Not only do they produce different substances, but the relative quantities of oxygen uniting with the nitrogen, bear a simple relation with each other. Fourteen parts by weight of nitrogen will combine with eight parts of oxygen to form nitrous oxide, or with sixteen parts to form nitric oxide, or with twenty-four parts to form hyponitrous acid, or with thirty-two parts to form nitrous acid, or with forty parts to form nitric acid. But these numbers bear the simple relations of one, two, three, four, and five times eight. These relations are not always quite so simple, but they are so simple that they do not violate the law.

Another law that is never violated in the formation of compounds may be expressed as follows: The equivalent of a compound body is the sum of the equivalents of its elements. This is not mere fancy, but is demonstrated by research and experience. For example, the equivalent of calcium being twenty, and that of oxygen eight, the equivalent of lime, which is oxide of calcium, is twenty-eight, according to this law, and the equivalent of water, being eight and one, of oxygen and hydrogen, it is found by experiment that nine pounds of water will slake twenty-eight pounds of lime. That is that much water will combine with the lime without wetting it. And this law, or principle, governs the foundation of all compounds.

Thus we have found chemistry a science, governed by laws; and that it is a science coextensive with matter,—indeed over-reaching the boundaries of the material universe. Imagine the farthest—the most distant particle of matter, chemistry not only has to do with that, but it is the only science that goes further on to ascertain if matter is present in the great beyond; for only chemistry and omniscience can tell.

Chemical affinity must still be recognized as one of the great forces of Nature, and it produces changes in the properties of matter, independent of micro-organisms.

DOES NATURE PROVIDE FOR DEATH?

Horace Mann's idea of artificial teeth was that there should not be separate teeth, but solid blocks of porcelain all the way around the arch. He claimed that Nature, in having them grow as individual teeth, was providing for their separate extraction when decayed. But has Nature made provision for the decay of the teeth? or for the disintegration of any physiological structure?

Before man had violated any law of his being we presume waste and repair were exactly balanced in his system,—in short, that he was designed to live forever. The knife of the anatomist cuts down on and reveals organs for life, and not structures intended for death. We are told in the Book that "the Lord God breathed into his nostrils the breath of life, and man became a living soul." Not a dying soul. Is it not physiological blasphemy to claim that death is a provision of Nature?

IN MEMORIAM.

Dr. W. H. Atkinson.—In the providence of an All-Wise and Over-Ruling Father the subject of this tribute was removed from this to a higher life at his home in New York, April 2, 1891.

It is eminently proper that there should be placed upon the records of this association some evidence of the esteem and appreciation entertained by the members of this body for Dr. Atkinson.

He was one of the founders of this association, and none labored with a more persevering industry, than he, for its permanent establishment and enduring welfare. He was always present at its meetings, and ever ready with a hearty willingness to fulfil any duty, or perform any work assigned to him; he doubtless exercised a deeper and broader impress upon it than any other member; he was always the advocate of a broad and liberal policy, impatient with the low, narrow and selfish. He possessed strong convictions, and was ever ready to avow and defend them, mere antagonism added strength to his forceful nature, notwithstanding this, he would yield with child-like simplicity to evidence and reason, when properly presented.

He was not only interested here, but in association work everywhere and gave aid and co operation in the organization and maintenance of dental societies throughout this country. He was enthusiastic in the formation of dental and scientific societies, throwing his whole energy, whenever opportunity offered, into such enterprises.

He was also greatly interested in the subject of dental education, ever ready to give wise counsel and aid, whenever it was in his power, and wherever needed.

By his enthusiasm he awakened interest, and stimulated thought wherever he went, indeed, his presence was an inspiration. He exercised an almost unparalleled influence in the profession, and that too in the way of aiding, and making better professionally those who came within its sphere, this he did at home, in his office, and abroad. He was the first to promulgate many new points in practice; he never hesitated to put forth anything that he thought would be of service to others; he commucated freely all he had. He possessed a wonderful faculty for communicating knowledge to others, as was shown in the fact that for years he had private classes that came to his office at stated times, and sat under his instruction, and such was his power in this work, that he was able to communicate not only of his knowledge, but of his enthusiasm as well, to those who were his pupils. Everything he did and every resource he possessed were made subservient to his ambition for the advancement of dental science and art.

He had a broad, generous and sympathetic nature; with a heart large enough for the reception of all who had any just claim upon the regard and esteem of our common humanity. He was a firm and abiding friend, sympathetic, kind, and always ready to aid those in trouble.

And now in view of this great loss,—

Resolved, That we will ever cherish, and will seek to perpetuate the memory of our departed brother, whose demise we so sadly mourn to-day; that we will not only cherish it ourselves, but will seek to bear it on to those who come after.

Resolved, That in all the traits of this grand character, as above delineated, there is an example to which we can with profit conform; and especially may the younger, and the coming members of the profession be directed to this great exemplar.

Resolved, That this tribute of regard and affection be spread on a memorial page of the transactions of this body.

Resolved, That a copy, properly prepared, be sent to the family of the deceased.

Resolved, That a copy be sent to the dental journals of this and other countries for publication.

J. Taft,
Geo. W. McElhaney,
L. Jack,
F. Abbott,
Eugene S. Talbot,

American Dental Association, 1891.

What We See and Hear.

[We are always pleased to receive short, practical articles for this department, and invite any to send brief descriptions of such appliances, devices, methods, remedies, etc., as will be of interest to the profession.]

Tooth Brushing.—I should urgently advise all dentists to insist upon their patients cleansing the teeth thoroughly before they go to bed. If there is any one time of day that they should clean their teeth, it is after the last meal.—Dr. Baldwin.

A Good Tent.—*Don't* fail to remember that sterilized cotton formed into required shape, saturated with thin sandarac varnish (surplus varnish to be expressed between layers of blotting paper or napkin), makes one of the most satisfactory tents known.—Dr. W. Mitchell.

Do your best and you will have the consciousness of duty done, even though you be disappointed in finding that to endure which you expected to fail, and that to fail which you expected to last; for the conditions surrounding our work are not always fixed and are often beyond our control.—Dr. A. W. Freeman.

Devitilizing Paste.—Dr. Mcintosh: I would like to mention a formula which relieves pain in eight cases out of ten. It is as follows:

Arsenic (in fine powder),	four parts.
Cocaine hydrochlorate,	four parts.
Menthol,	one part.

Glycerine (sufficient to make a stiff paste), applied as arsenic is applied.

I may say with this formula two-thirds of my cases are comparatively free from pain.—*Ill. So.*

Impure air is the causative agent of many maladies, especially as occurring among children. This should lead us to impart instruction to our patients as regards ventilation and the practice of disinfection. All this costs no more than the desire to do our highest duty, and to augment the welfare of those who would confide in our knowledge and judgment. This applies also to clothing, exercise, sleep, occupation, and general habits of life. Scientific direction in each implies a reasonable understanding covered by the curriculum of studies easily within the reach of all who would claim distinction as dental scientists.—Dr. W. S. Elliott.

The Third Molar.—A great many third molar teeth are under normal in size, so that if the first molar tooth is extracted you will have a smaller masticating apparatus to begin with. If the first molar tooth is extracted in anticipation of bringing forward the third molar tooth, and it happens to be one under size, then you have deformed that mouth. If the first molar is extracted on account of extensive caries at the ninth or tenth—not later than the tenth—year it is a perfectly justifiable operation; but to extract it simply because it may be decayed, or the teeth may be irregularly arranged, I consider bad practice.—Dr. A. W. Harlan, *Chic. D. So.*, *Review.*

Mouth-Wash.—David uses the following mixture as a tonic and antiseptic mouth-wash (*Medical News*):

℞	Thymol - - -	7 grs.
	Borax - - - -	15 grs.
	Water - - - -	1½ oz.

A few drops of this are to be placed in a wineglassful of warm water, and the mouth rinsed with it. In cases in which the breath is fetid, owing to deposits about the tonsils and gums, the following wash is said to be serviceable:

℞	Borate of sodium - -	15 grs.
	Alcohol - - - -	½ drachm.
	Water - - - -	1 pint.
	Thymol - - - -	7 grs. *m*

—*Journal A. M. A.*

Alveolar Abscess.—To relieve the pain that accompanies the formation of an alveolar abscess I was led by theoretical reasons to the use of secale cornutum in a few cases with prompt and marked relief resulting. Its physiological action is to contract the arterioles at the painful point, thus lessening the hyperemia pus formation and suffering. This neuralgia is a congestive one and the drug antagonizes that condition. The contra-indications for its use would be during menstruation, pregnancy, kidney, or heart disease, or cerebral anæmia. When these are absent, the safety of the medicine as compared to the alkaloids in general use for toothache especially, recommend ergot. Squibb's fluid extract should be used, 10 drops every ten minutes, until relieved, which should occur before six doses are taken.—S. V. Clevenger.

First and Third Molars.—I do not think that with the methods we now have of saving the first molar that it need very often be extracted, we do not gain by that practice as much as we desire. As a general rule the articulation becomes disturbed, both by the dropping of the teeth backward, forward, inward or outward. The second or third molars do seldom as properly articulate if the first molars are absent as when they remain. Also, unless the second molar moves forward we will lose an extremely large tooth, and one which is better adapted for masticalion than any other, by virtue of its location and the relation that it bears to the fulcrum and the muscular power exerted by the jaws. We can exert more force at that point than anywhere else, hence when possible, it is not good practice to extract that tooth with the hope of having some other tooth do as much good.

Another thing: I am in favor of saving the third molar, and I endeavor to remove that impression which a great many people have that the third molar is a poorer tooth than the others. It is an error, I think, to allow people to believe that the third molar is a much inferior tooth to all of the others. Therefore I am always in favor of attempting to save and recommend the saving of the third molar.—Dr. Ottofy, *Chic. So., Review.*

Question.—*In preparing a central incisor for Logan crown, the drill was carried through the apex of root, causing pain and hemorrhage. The crown was attached at once with amalgam, and the patient informed that it would tighten and last forever, if undisturbed while setting. In a few weeks the crown came off, and the patient wished it replaced. The root is filled with blood, and bleeds on the slightest provocation. How should this be treated before crowning again?*

Answer.—Free the canal from all foreign substances; then carry to apex of canal a pledget of cotton moistened with creosote, and fill the remainder of canal, or nearly so, with cotton and sandarac varnish, and the rest with gutta-percha. Leave one week, or more. If inflammation supervenes, treat it as in other cases of inflammation till a normal condition supervenes. After the healing of soft tissue at apex of root, the filling is to be remoxed, and the canal measured as to length and size; then fit accurately a plug of cork, and carry by same pressure to the end of root—not through, but even with the apex. You can now insert your crown with the best grade of cement, waiting for its hardening before dismissing your patient.—I. J. Wetherbee, D.D.S., *Items.*

Curing Toothache and Saving Pulps.—Every dentist should have on hand equal parts carbolic acid (not creosote, for we want the coagulable effect of the former), and oil of cloves, made into a thin paste with tannin. When a patient comes with toothache from an exposed pulp, the tooth cavity should be first filled with loose cotton saturated with chloroform, almost immediately removed and a small quantity of this paste, on cotton, placed on the exposed pulp and covered with sandarac varnish. The chloroform generally removes the toothache almost instantly, but it will soon return if the paste is not applied. In fifteen minutes examination and treatment of the pulp can take place without trouble.

If the pulp is to be preserved, the loose debris should be carefully removed, and the walls thoroughly prepared for filling, but the soft layers of dentine found over the pulp should not be removed. Now place a little more of this paste on a small piece of note paper over the foundation of the cavity, and cover this with thin oxyphosphate. When hardened the rest of the cavity may be filled with metal.

We do not say there will be no failures. Some pulps will die in spite of the best treatment. If your faith in your success is weak, leave the paste covered with only oxyphosphate for a while that you may the more easily get at the pulp at a future sitting.—*Editorial, Items.*

Copper Amalgam N. G.—I want to express a strong regret for ever having used copper amalgam. I think it will not only blacken the teeth, but blacken any man's reputation, and I think the sooner that is known and appreciated in the profession, the better it will be. Unfortunately, it is not a trait of human nature to profit by the experience of others. We like to learn for ourselves. I am commencing now to do over many of these fillings, which I put in two years ago. I have been doing them over for some time past. I have not wanted to be hasty in condemning this material, for I have seen many cases that are doing well, but it is too unreliable and we know too little about it to justify its indiscriminate use. I feel impelled to make this severe statement in reference to copper amalgam, because only recently a man long in practice, a member of this society, told me he had just commenced its use, and, knowing one must wait for two or three years to really know its effects, I thought it my duty to warn others as I warned him. It causes, first, the discoloration of all dead substances of the tooth; in the next place, it wears away mechanically, evidently on the surface, and it wastes away, on proximal surfaces, in a manner that suggests chemical solution. When it becomes necessary to remove such a filling, there is a more sensitive condition to contend with than when the cavity was first filled. When used for the purpose of contouring teeth, it takes but a year, or two years at the most, to allow so much waste from the fillings that food easily passes in between them, and the fillings have to be replaced.—DR. S. G. PERRY, *N. Y. So., Inter. Jour. report.*

AN APPLIANCE FOR THE PREVENTION OF PAIN OR SORENESS DURING MALLETING.—It consists of a piece of ¾-inch lead pipe about four or five inches in length, so formed that the point resembles a short foot plugger; if this is held against the opposite side of the tooth being filled it prevents pain and soreness. As it sometimes must be held when it is also desired to hold the mouth mirror, this can be readily done by cutting off the handle of the mirror and putting it into holes conveniently drilled in the lead. This is the invention of Dr. Lathrop, of Detroit. Dr. Keith also shows the following appliances for the rapid heating, soldering and cooling of small pieces for crown-work, bridges, bands, backings, etc. Take a piece of Russia sheet iron, shape it into the form of a small box, and fill with common sand. Any piece laid into the sand, leaving only the part to be soldered exposed, can at once be heated and soldered, as there is no investing, drying or evaporating necessary. Also an improvement for fitting matrices to the sides of the teeth. For the matrix, No. 36 ribbon steel is used. Cut it to fit around the tooth, punch a hole in each end of the ribbon, pass through the holes a small screw square at one end, two nuts of steel are threaded, the sides of them are the length of the crown of a tooth and each of the four sides is shaped differently so as to fit different classes of teeth. The band is put around the tooth, the screws passed through the holes in it, and the ends of the steel band are drawn together by turning the screw. As the nuts fit the side of the tooth the matrix is drawn close up to the margins their entire length.—DR. H. H. KEITH, *Ill. So.*

IMMEDIATE REMOVAL OF DENTAL PULPS.—Take a ten per cent. solution of cocaine, or the following solution I have used with success:

Cocaine crystals - - - -	20 gr.
Antipyrine - - - - -	20 gr.
Carbolic acid - - - -	10 drops.
Distilled water - - - -	1 oz.

Mix. It will keep indefinitely.

Rubber-dam applied or napkins in place, fill hypodermic syringe with solution; place point in the opening of pulp cavity gently against the pulp, then steadily but rapidly force the contents of the syringe against and up into the substance of the pulp.

The pain is only momentary, and in three minutes you can enlarge the opening into the pulp cavity. If pulp is still sensitive, repeat the dose. You can then remove the entire pulp without giving pain. In molars, each root has to be treated separately. The force used in injecting the remedy is an important factor in successfully performing the operation, and it should be directed in such a manner as to penetrate the fang as far as possible. The anæsthetic effect is temporary, and if the pulp is not all removed at first sitting, sensation will return again in an intensified form. As soon as the pulp proper is removed, fill the hypodermic syringe with tincture of hamamelis, Pond's Extract, and force it into the pulp cavity, same as before. This will not only wash out the loose fragments, but it will control the hemorrhage. I never had it fail to stop the hemorrhage immediately. When I am satisfied the pulp is all removed from the fangs, I syringe same as above, then dry with absorbents first and complete with hot air. Fill roots usually with chloro-percha and gutta-percha cones. If convenient, fill crowns at same sitting. Every case so treated has been a success.—Dr. J. C. McCoy, *Mo. So., Archives.*

Societies.

"Wherewith one may edify another."

OHIO STATE DENTAL SOCIETY.

The prospects for a large and profitable meeting of the Ohio State Dental Society are most flattering. The committee of arrangements are sparing no pains to this end. The meetings will be held in the new and magnificent "Hotel Chittenden," where special rates and conveniences are offered for this occasion to all visitors.

Papers will be presented by Drs. C. M. Wright, J. Taft, H. A. Smith, G. H. Junkerman, E. H. Raffensperger, J. R. Callahan, F. W. Sage, Jere E. Robinson. Also Drs. Harlan of Chicago, A. O. Rawls of Kentucky, W. S. Elliott of New York, and others.

A conspicuous feature of the meeting will be clinics and practical demonstrations in methods and practice, viz., "glass fillings," "gold tippings," "inlays," "combination fillings." Also an exhibition of Parmly Brown's porcelain bridges, electrical auxilliaries for dental practice and other appliances.

Dr. Geo. W. Melotte, of New York, will demonstrate at the meeting.

The meeting opens promptly at 9 A. M., Tuesday, Dec. 1st. A banquet takes place Wednesday evening at the "Hotel Chittenden" to which every member and foreign guest is cordially invited.

Programs will soon be mailed to all, and we hope to have with us every member of the profession in the State.

Otto Arnold, *Sec'y*,
Columbus.

OHIO VALLEY DENTAL SOCIETY.

The regular meeting of the Ohio Valley Dental Society will be held at the residence of Dr. Geo. C. Milligan, Wheeling Island, on Monday evening, November 2d, 1891.

PROGRAM.—Essay: "Professional Etiquette," Dr. Chas. E. Mason. Essay: "Contour Work," Dr. F. S. Maxwell. Essay: "Care of Children's Teeth," Dr. J. H. McClure. Incidents of Office Practice.

F. S. MAXWELL, *Sec'y.*

Our Aftermath.

OHIO STATE DENTAL SOCIETY, Columbus, Tuesday, Dec. 1st, 1891.

MARRIED.—Dr. F. C. Sizeland and Miss Ray L. Smith, both of Muskegon, Mich., Sept. 12th, 1891.

DR. OTTO ARNOLD, Columbus, Ohio, is Lecturer on Dental Surgery in the Columbus Medical College.

THE Cleveland Nitrous Oxide Company of Cleveland was burned out Oct. 21st. Loss, $30,000; insurance, $10,000.

SPECIAL RAILROAD and hotel rates will be given those attending the Ohio State Dental Society meeting at Columbus, Dec. 1, 2 and 3.

WANTED.—An easy and successful method of cleaning and polishing britannia impression trays, after use with plaster and salt.

FOR POLISHING SILVER OR nickel-plate, a preparation called "Burnishine" is excellent. It is probably benzine and cyanide of potassium.

DR. CURTIS' ARTICLE on Plastic Bases and Pinless Teeth is copied into the *British Journal of Dental Science* for Sept. 1st without credit to THE JOURNAL, in which it first appeared.

DON'T FORGET Dec. 1st and the meeting of the Ohio State Dental Society at Columbus. If you do not receive a programme write to Dr. Otto Arnold, Secretary, Columbus, Ohio.

A NEW FLUX OF IRON has been brought out under the name of tephanite. It includes aluminum with the iron in a chemical combination, and is said to render the iron harder than the hardest steel.

Our Cincinnati Dentist-Poet.—

LIFE'S BATTLEFIELD.

Oh, painter, when in thy happiest mood,
Depict for me life's battlefield;
Yet not the corse or the bleaching skull,
But rather the flowers 'neath which they're conceal'd.
—William D. Kempton.

To Make Copper Hard as Steel.—Peter Johnson, of Dassel, Minn., thinks he has discovered the long lost art of tempering copper. He and Nils Nilson, a machinist, want to organize a company to build a factory in Minneapolis. The new process will make copper as hard as steel.

"Self Examinations for Medical Students" is the title of a useful little book containing "3000 questions on medical subjects with the proper references to standard works in which the correct replies will be found." This work is an improvement on others of its class in that the student must look up the replies in text-books on the various subjects and it is just in line with post-graduate study, also. 144 pages, interleaved. Philadelphia, P. Blakiston, Son & Co.

"Handsome Hamiltonians" who nightly congregate at the St. Charles Hotel, Hamilton, Ohio, are the subjects of a letter to the *Cin. Com. Gaz.* by E. C. H. Among those sketched are Dr. E. S. Griffis. We quote: "Dr. E. S. Griffis is one of the most distinguished personages that grace chairs in this happy realm of man's contentment. The Doctor enjoys the distinction of being the handsomest and the most ultra in his dress of all our beau ideals. He is truly a second edition of that famous English gentleman, Beau Brummel. It is stated upon incontrovertible authority, however, that Beau did not sport a dog cart; thus the Doctor goes him one better—yellow ribbon and all."

A Professional Trades Union is the way the newspapers size up Bro. Crouse's association.

"One of the strongest professional trades unions in the United States is the Dentists' Protective Association. After due warning the doors were closed when the membership had reached about five thousand. Every man man paid in $10, and the resultant fund of $50,000, together with what may come in from new members, is expected to serve the needs of the organization for an indefinite period. When a member of the society gets into a lawsuit involving some principle peculiarly important to the whole body of dentists, the association assigns counsel and meets the whole expense of the trfal. The consequence is that members of the association escape such suits as are brought merely to annoy, and the fund is seldom encroached upon for counsel fees."

"The doors" are not "closed" except to those having suits pending against them. So send in your application for membership to Dr. J. N. Crouse, 2231 Prairie Avenue, Chicago, Ill.

Saving the Natural Teeth.—When a dentist says to you that he can "save your teeth," tell him that you would rather die toothless than be ground to atoms, stabbed to the nerve centers, prodded with a buzz-saw and gagged with large sections of India-rubber sheets, mere to save a few bits of undesirable bone. The first thing the dentist did to me when he undertook to "save" my teeth was to tip me back in a chair and prop open my mouth with a stick. Then he lined my mouth with rubber and attached weights to that portion of the lining which hung outside. Then he put a bib under my chin and stood off a little way and gloated over me. I tried to tell him what I thought of him, but was past articulate speech. "Pleasant afternoon," said he, taking up a battle-ax and stepping on a high stool where he could overlook the field of operation. After he had quarried a cavity, and blasted it out, he called an assistant and bade him turn a treadle. A big bumble bee immediately flew out of the revolving spokes and charged at the newly made cavity as though it was a flower cup full of honey. I saw stars, I heard a million slate pencils squeaking over a gritty surface, I felt cold hands toying with each particular vertebra of my spine, and a Waterbury watch seemed merrily winding in each ear. I tried again to speak, but my efforts were in vain. I would have given uncounted gold just to swallow. How little we appreciate our blessings until deprived of them! How unmindful of my opportunities had I been all through those vanished years when I could swallow or not swallow as the mood overtook me. What countless times I had performed that blessed act unwittingly, and now I would have sold my birthright (if I had one) for the power to repeat the blessed operation. It is generally just at this juncture when, between the pangs of delayed deglutition and the consciousness of feeble-minded drooling, the spark of reason bids fair to be extinguished forever, that the dentist begins to joke. What avails the majestic glance of a wrathful eye when the lower features are swathed in a damp sheet? My attempt at scornful protest was like the attempt of a teething babe to hurl the sevenfold curse of Rome. Alarmed perhaps at the pallor which I knew full well was creeping over my face, my tormentor finally removed the stick from between my teeth and gave me one more chance to swallow and to appreciate to its full what the poet meant when he carolled the glad refrain, "Wipe off your chin!"

"You can come again Saturday," said the dentist as I reeled across the floor and donned my hat. "I shall never come again!" said I in hollow tones like a voice from the tomb. "You will lose your teeth if you don't," said he. "Yes?" whispered I, leaning my tottering frame against the door-post for support. "And what if I prefer to lose my teeth rather than lose my reason and my life? What I have suffered in your den, old man (he was a gray-headed villain of full 60 summers), has shattered my nerves for years to come. The horror I have endured with your buzz-saws and your battle axes, your patent 7 by 9 drills and your circular action battering rams has been more of a loss in mental strength and physical aplomb than to have laid down every tooth I have in the dust. When you have patented a process by which dentistry is made not any more painful than guillotining I shall call again; until then, old man, adieu!" (N. B.—Pride wlll make any woman tell the worst sort of fibs. Notwithstanding my vow, I shall be on hand Saturday, and that dentist knows it.)—Amber in *Chicago Herald*.

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"A word fitly spoken is like apples of gold."—SOLOMON.

THE THIRTY-SIXTH ANNUAL MEETING FO THE MICHIGAN DENTAL ASSOCIATION.

SAULT STE. MARIE, MICH., AUGUST 18, 1891.

Reported by N. S. HOFF, D. D. S., Ann Arbor, Mich.

THE association meetings were held in the Court Room of the Court House. The first session was called to order at 10½ o'clock by president Dr, H. K. Lathrop.

Rev. P. T. Rowe was present aud invoked the Divine blessing upon the meeting.

The Hon. Geo. M. Brown, mayor of the city was introduced and made an address of welcome, complimenting the members of the association and the profession generally. The citizens of Sault Ste. Marie were highly honored to have the association meet in their city, and as its representative, Mr. Brown desired most cordially to welcome the members individually and the association to all the privileges and hospitality of the city.

The president thanked Mr. Brown for his cordial welcome, and read his annual address.

PRESIDENT'S ADDRESS.

For the honor which it has been your pleasure to confer upon me to be your presiding officer for this meeting, I return you my most sincere thanks. I am not insensible to the importance of the position to which you have called me, and I have grave fears of my ability to properly fill the position, for I have little or no education in parliamentary law. But in discharging the duties which are incumbent upon me, I shall endeavor to serve you to the best of my knowledge and ability. I hope and trust, and indeed I am sure that I shall be fully sustained and aided in that labor by every member present.

We meet here to-day under the most favorable auspices, harmonious and prosperous, so let our meetings and relations ever remain to our mutual benefit. Dentistry scarcely a century old, has risen from its humble origin and become a highly respectable power for good throughout the world. At first it was confined to and practiced by a few ingenious and self-taught workmen, who made their own instruments and materials and did the best they could under the circumstances and conditions of the times. Now by concerted action, by science and association, we have arrived at a highly commendable condition of attainment in the beauty and usefulness of our manipulations.

The success that has attended our efforts for improvement is a matter of which we may well be proud; for dentistry has kept pace with the movements of the age and now claims to be a profession the peer of any other.

In our efforts to raise our profession to its present exalted position, we have done nobly for ourselves and for humanity. Our object has been, and I hope will continue to be, to attain the greatest usefulness and perfection in an honored calling.

All societies and associations are composed of members enough it is hoped to accomplish the particular object for which they were organized. In the less thickly populated sections of the country such organizations are seldom found, and the want of companionship and society is sadly felt; but in large cities and thickly settled towns, such organizations are much more easily formed and maintained.

The members of any profession widely separated, find it very difficult to keep up with the march of their chosen calling, and to obtain that skill which will give them confidence in their ability for success and to meet on equal terms their more favored brothers. Such isolated practitioners of dentistry are apt to fall into methods and customs of their own, which are very liable to be full of imperfections. They are apt to recognize no code of ethics or practice and become a law unto themselves, and it requires a great amount of courage on the part of any one to question their lack of attainments.

The dentist should be a man of skill, sound judgment, and above all, honest. Now to give these attainments to the members of our profession, the colleges, societies and associations, have done very much, but it seems to me that still other organizations could do still more; just how or in what way I have only a vague idea in my own mind. I was impressed by the remarks of Dr. W. H. Richards, of Knoxville, Tenn., before the Southern Dental Association. He favored a permanent place of meeting that could be called a home, have a library and museum, and he said the advantages to be gained by this course were, that the sessions could be extended to such time as would give ample opportunity to carry through in detail all clinics, lectures or mechanical procedures, and have lectures on dentistry, and so much of the collateral sciences as pertains thereto, thus year by year raising the standard of dentistry and offering a post-graduate course to all members of the association. Now, gentlemen, I know of no better place to put such a thing to a practical demonstration than right here in our great State of Michigan, and although I have had very little talk with any one on the subject, I doubt if we would have any obstacles put in our way, of using lecture rooms, laboratories, library and museum of the Dental Department of the University of Michigan.

Ann Arbor is a beautiful little city, and a more pleasant place could hardly be found to spend a few days during the summer, when the regular departments of the university were not in session. This may not impress you all as it has me, but I offer it only as a suggestion, but it seems to me a step in the right direction. I hope you will all think about it, and if any of you think you have a better idea, tell us about it and I am sure we shall be able to devise some scheme that will accomplish our purpose.

Dr. J. Taft: In these days the greatest and best things are accomplished, not by individuals alone. While it is generally the case that some one mind is responsible for the first idea or incentive, most great and important enterprises are the result of combinations of kindred minds. This will be no where better illustrated than in the wonderful progress of dental art and science; in fact this associated effort has resulted in the exaltation of dentistry from mere handicraft to a scientific profession. It will be profitable to recall the influences for good of this association in this State to enforce the thought that associated effort is good. It was because this association asked the legislature of the State to protect its people from charlatans and tyros that we now have the excellent laws in this State, protecting the qualified practitioner as well as the innocent public.

This association also, by concerted action succeeded in having established in connection with the great State University a department where dental science should be taught. And it ought to be the desire of every member of this society to most heartily concur in the suggestion of the president in regard to the establishment of a permanent home for the association, where a library, museum and laboratories should be available for any sort of study, or investigation that would provide better practitioners, or give opportunities for advanced thinkers to carry out experiments, which it would be impracticable for individuals to provide for themselves. No better work it seems could engage the attention of this meeting than to put this matter in the way of accomplishment.

By vote of the association the president was instructed to appoint a committee to consider the practicability and advisability of establishing a permanent place of meeting for the association. This committee, appointed since the meeting, is complete, as follows: J. Taft, N. S. Hoff, W. A. Dorland, J. Ward House, Wm. Cleland.

The chairman of none of the regular committees being present, no reports were made.

The afternoon of the first day was devoted to clinics. Dr. W. A. Dorland, of Grand Rapids, exhibited a combination "Plate and Bridge," which he had just constructed for a patient. It consisted of a small gold plate swaged to cover only the alveolar ridge of the upper jaw, except the third molar tooth on each side, which was covered with a collar having parallel sides and a flat cap, the tooth having previously been dressed to allow a nice adjustment. A collar clasp or band was made to fit around the first collar, accurately and of sufficient width and strength to resist the movements of mastication. A cap with cusps was then soldered on top of this band, making a crown, and this crown was then soldered to the gold plate. The idea being that the gold plate would have an advantage because of the limited amount of mucous membrane covered, and also because of its secure attachment by means of the accurate fitting crown to the cylindrical ferrule. This ferrule being previously cemented to the natural tooth—in this way a removable bridge is secured, capable of being manipulated at will by the patient, for cleanliness, etc., and a degree of stability secured which is impracticable with the ordinary plate, and the whole fixture presenting none of the objectionable features of permanently attached bridge-work. The regular "bridge dummies" with porcelain face and metallic caps were used as teeth and so soldered to the plate as to secure cleanliness and the largest mastication surface.

The Doctor also exhibited a lower denture in process of construction involving the same ideas. The work was beautifully and artistically done and showed an amount of patience and skill that is highly commendable.

Dr. E. R. Jackson, of Grand Rapids, crowned a second upper bicuspid tooth with a gold Richmond crown, and attached a bicuspid dummy with a porcelain face and metallic cap to fill the space caused by the loss of the first bicuspid. This was a successful operation and readily accomplished in a very satisfactory manner, making a sightly, cleanly and useful substitute for the lost tooth. There were no special features in the Doctor's methods except perhaps his method of stamping the caps for his crowns and dummies, which he obtains by stamping from solid buttons or pieces of thick gold by means of steel stamps and counter-dies of his own construction.

EVENING SESSION.

The meeting was called to order at 7:30 P. M. by president Lathrop, and the minutes of the previous session read and approved.

DR. ISAAC DOUGLAS read a paper entitled,

HINTS FROM THE OFFICE AND LABORATORY.

If we would command the respect due to our profession, we must attend carefully to the most common-place details of our work. Whether a patient does or does not have a glimmering of the higher attaiments of a dentist, he quickly takes in the ordinary arrangements of the office and habits of the operator; and he has a right to require, not only general neatness, but special cleanliness.

With my own eyes I have seen in dental offices sights which made me blush for the brotherhood.

A dentist's hands, in particular, should not only look clean, but should *be* clean, and *smell* clean; and perfect cleanliness is not likely to be attained without suitable conveniences. The neatest and most handy method of washing the hands is from a running stream. It takes less water when that is an object; and it is much quicker, which is always an advantage. And it is wholly unobjectionable. Those who are not connected with water-works, will be well repaid for arranging a tank, even if no larger than a common water pail.

It would not require a very fastidious patient to become utterly disgusted with a dentist who would put his hands into four successive mouths, and back again into the first mouth, without any attempt at cleansing, except to wipe them on a filthy napkin on the head-rest of the chair. Nor would his disgust be less were he to see the filthy water, and the filthier wash-bowl where he finally washed his hands, and the much-used towel where he wiped them.

If any one thinks this picture overdrawn, it is only because his observation has been very limited in this direction.

Even though supposed to be clean, the dentist's hands should always be washed just before commencing to work for a patient; that the latter may know their condition, from their coolness and moisture, and may experience a feeling of comfort.

Tact and suavity are needful accomplishments when working for adults, and indispensable for children. In case of emergency, the operator should be quick to invent a way to bridge it over; and, when practicable, should conceal his dilemma from the patient, but not deceive,

A few days ago I was putting in the last one of a large job of filling. The tooth was a left upper lateral incisor. The anterior proximate side had been filed away before coming to me. After removing what had been softened by decay, the cavity was extremely shallow, the dentine being opaque further toward the pulp. When the cavity was three-fourths filled, I broke through to the pulp; this being the first case of the kind in over 40 years' practice. I revealed my dismay by the expression, "Oh, pshaw." The secret once out, I explained to the patient who remarked that it did not hurt. Having removed the filling, and putting a sharp drill into the engine, I went to the pulp from the highest portion of the cavity. As soon as the drill struck the pulp, I put in some crystals of cocaine, rested five minutes, then resumed with the drill, until an opening was made sufficient to introduce a barbed broach. Put in some more cocaine, rested ten minutes, then with the broach removed the pulp entire. The patient then remarked that she had not suffered much. I then washed out and filled the root canal, and filled the crown cavity. The patient seemed more delighted with the results than if the accident had not occurred, remarking that the operation was not as painful as the separation of teeth with the separator.

To keep dental cavities dry while filling, it is necessary to resort to a great many expedients, according to the situation and other circumstances. With many small cavities, a piece of spunk or string, or a roll of paper, crowded under the free margin of the gums, will serve the purpose admirably; cut the gums loose a little way, if necessary.

Below a labial cavity in a lower cuspid, the gums and alveolar border had receded so that the cavity extended nearly one-eighth of an inch below the margin of the alveolar border upon the opposite side of the tooth. This is a very perplexing case to fill with gold. Take a piece of hard wood, shape it like a wood-carver's gouge, only let each corner project that it may pass in more or less between the teeth, fitting it to the position on the tooth. Before applying the dam, saturate a thin piece of spunk with a 20 per cent. solution of cocaine, and lay it on the gums for five or ten minutes; do not have too much of the solution, lest it mix with the saliva. Now apply the rubber-dam; also the ligature, tied loosely for the present. Pull the rubber and ligature-knot downward in front of the tooth, so as to expose the entire cavity and margin of the gums above the rubber. Place the stick in position and hold the rubber below the cavity firmly; let loose the rubber, and with a thin instrument, carefully work the rubber to its place. In this an assistant may be of great service by tightening the ligature gently while holding the stick firmly in place with the left hand. The cavity may now be prepared and filled entirely with the right hand.

There are many cavities where we cannot put in a first-class gold filling, but can put in an excellent filling of amalgam; and without question this is much better than a poor gold one, for nothing will preserve a tooth better than the best amalgam filling.

Take a case of a left lower wisdom tooth with a large crown filling of amalgam, which has done service for eleven years, yet is still in perfect condition. A large cavity has formed in the posterior buccal side; three-fourths of the posterior side, and one-half of the buccal side are gone nearly to the margin of the gums, and, when prepared, to the gums and below. Of course the gum is fretted and cut more or less by the excavators, and bleeding slightly. Wash out the cavity, dry it with paper or spunk, and fill with dry absorbent cotton, allowing the cotton to extend over the gums. Dip a pellet of cotton in alcohol and touch that in the tooth to saturate it. Twist quite hard a piece of rather coarse ligature-twine, double and twist hard again, wax well and pass through the flame of a lamp to melt in the wax. Remove the cotton from the tooth; there is now no hemorrhage. Pass the twine around the tooth. If the second molar is too close to admit so large a cord between the crowns, run a piece of floss silk between the strands at the doubled end of the twine, pass the doubled floss between the crowns, and, by it, draw the cord through between the necks of the teeth. Tie the twine around the tooth by a surgeon's knot on the lingual side. Do not draw it tightly at first as it will lie across the cavity, but carry this part backward and push it down between the neck of the tooth and the gums. This excites slight hemorrhage, which can be stopped as before. The pulp of this tooth was destroyed about one year ago, and the posterior cavity filled,—or rather, stuffed, by a tooth-carpenter. After removing the crown filling, and after properly preparing and filling the root canals, again fill the cavity with cotton and saturate with alcohol, as before; yet not pressing it on the gums very hard this time, lest the removal of the pressure cause the blood to flow where the gums may have been cut. Prepare the amalgam and press it pretty dry. Now, either fix a pad of bibulous paper spongoid, or fold the corner of a napkin, to press against the parotid duct; twist the napkin and lay it between the tongue and jaw. Tip the head well to the right, remove the cotton, take up the excess of saliva, dry all with the warm air syringe, and the cavity is ready for the filling.

Take rather a large piece of amalgam at first, so as to cover the part next to the gum at once, pressing it down firmly. The more force is used in packing the filling, the better the prospect of its lasting for many years. After thoroughly condensing the filling, dress it to shape, being careful that it does not project beyond the margin of the neck of the tooth.

Suppose a case of two approximate cavities in upper molars, reaching far above the enamel of the tooth; the gums having receded. It is impossible to make the dam stay above the cavities, but, by putting a string around each tooth, as described heretofore, the two strings nearly or quite fill the space between the two teeth above the cavities. After preparing and packing and again drying, as in the other case, fill as one cavity, letting the first piece of filling be large enough to cover the upper portion of both cavities at once. After they are well filled let the patient close the mouth and grind down on them well, provided the lateral walls are intact, so there is no danger of breaking down the filling. Then cut them apart and trim into that shape which will be the most durable and comfortable for the patient.

For gold fillings in those small cavities, sometimes called pinholes, first drill out the cavity round to remove the decay. Then with a small, round bur, very slightly undercut on one or two sides, just enough to insure the filling against turning while burnishing. With a bur a few sizes larger than the first, bevel the edges of the walls slightly, and after washing and drying, the cavity is ready to fill.

To prepare the filling, have a piece of bone, a tooth-brush handle will do, with holes graded to correspond with the engine bur. With a tapering square rimmer, enlarge these holes from one side, so that they will be tapering most of the way through. Make a cylinder larger than the cavity when rolled snugly between thumb and finger. Force this through a number of successive holes, until it will just fit the round part of the cavity, The cavity clean and dry, insert this prepared plug. If all is perfectly done, one can hear it squeak as it is forced through the round part of the cavity. Drive it home with plugger and mallet, and there is the most perfect filling that can possibly be put in such a cavity. In this way I have filled such cavities no larger than No. 00 burr. I have put in six of this kind, besides two other fillings in the grinding surface of one molar.

This method also works well in case of quite large tin fillings in the posterior surface of bicuspids and molars, when there was such a profuse flow of saliva that it was just impossible to keep the cavities dry long enough to fill them in the ordinary way. Of course the tooth back of the one filled must be missing to fill in this way.

In malleting sore teeth, hold a piece of block tin, lead or hard wood against the opposite side.

To prevent the pain from the application of oxyphosphate near the pulp, touch with a thin solution of gutta-percha in chloroform; over this lay a piece of No. 8 tin foil, or a flattened pellet of gold. Then put in the oxyphosphate.

Exposed pulps may be capped in a similar way by adding a small amount of oil of cloves to the gutta-percha solution. If the pulp be wounded, stop the hemorrhage with chloroform, and take away the clot so made before capping.

For pyorrhœa alveolaris, try a freshly prepared saturated solution of sulphate of copper. To apply, take a hard wood stick the size of a match, cut one end down to the thickness of thick writing paper, roughen the edges, twist on a very little cotton, dip into the solution and pass into the pockets, after pretty well removing the moisture with a napkin or bibulons paper. This works like magic.

To prevent dark joints in rubber work, and to prevent breaking blocks, grind and match the blocks together accurately. Bevel the corners toward the ridge slightly. After the job is flasked, put in warm water until warmed through. Separate as soon as warm enough. Peel out the body of the wax; wash out the rest of the wax with boiling water from one foot above. With a thin instrument press a No. 50 cotton thread into the v-shaped groove, letting the ends of the thread dip into the plaster on both sides, or at the ends. Cut a groove in the plaster next to the half of the flask that contains the model, to receive the surplus rubber. Make waste-gates every one-fourth inch all the way around, making them the shape and size of one half a No. 9 iron wire, or even larger. Be careful not to put in so much rubber that the excess will fill the trench. Have your flasks hot, and give the rubber plenty of time to move; it will not move quickly under pressure, except by too great force.

It is sometimes the case, particularly with a partial upper denture, that the plate will be as snug as desirable part of the time, but sometimes very loose. To avoid this, before casting your model make the grooves in the impression, caused by the rugæ of the mouth, much larger, as in some mouths these vary in size at intervals.

To secure the blessings of your patients, polish the gingival and palatal surfaces of all rubber plates.

Reflex Nervous Action.—Mrs. P., aged 32, was taken with pain in back of head and neck. A physician pronounced it neuralgia, and treated her several months, the patient meantime growing worse. A third M. D. called it spinal affection, and doctored her the remainder of two years. She then became insane. Then the physician advised her husband to take her to an asylum, but they took care of her at home. After she had been insane two weeks, she became rational one morning, and remarked, "I am going to Romeo to have my tooth pulled." This was the first complaint that had been made about the tooth. I was called to the house and extracted a right lower wisdom tooth with an abscess attached on the apex of the root as large as a green pea. This abscess had discharged through the tooth just enough to prevent its breaking elsewhere, but not enough to relieve the pressure; and the pain was reflected, first to the back of the neck and back of the head, and finally to the waist and elbows. The removal of the tooth ended the whole trouble, and twenty years after the symptoms had not returned.

Mr. B., seated in the chair, preparatory to having a tooth extracted, said: "I have had pain in my right elbow for three months; some of the time it has been swollen and lame, so that I could not feed myself with my right hand. I have not had a bit of pain in my tooth till this morning. Now I want to know if there is a nerve running from my elbow to my tooth as a part of the time the pain is in my tooth and a part of the time in my elbow?"

Mrs. S., aged 29, after suffering with a tooth for several days, came nine miles to have it extracted. It was evident at a glance that she was suffering from chorea. After three or four minutes she became quiet, and her friend remarked, "She has been in this condition for three days; please extract her tooth as soon as you can, and I will tell you about it afterward." As I put the forceps to her mouth, the spasm came on again. As soon as it subsided, I extracted the tooth. An expression of relief came over her face at once. Her friend then remarked, that the tooth would ache three or four minutes; the moment the pain left the tooth, she would commence to whip her hands together, and keep it up till the pain returned to the tooth. As soon as the tooth commenced to ache, the hands became quiet. This had gone on for three days, and her hands had become so sore that when she struck them together she would cry out like a child.

Mrs. A., aged 49, came for consultation about her left eye. It had pained her for two or three weeks. Examination revealed the fact that the pupil was drawn out of normal form, the larger diameter being double that of the lesser. Yet no inflammation was perceptible. Although she declared she had no trouble with the teeth, yet examination proved that the crown of the upper sixth-year molar was two-thirds wasted away, and the pulp very largely exposed. She would not be persuaded to have the tooth removed; and two weeks from that time, a darkness came over that eye, and she never recovered the use of it. Had the tooth been extracted in time, undoubtedly the eye would have been relieved.

DISCUSSION.

DR. J. TAFT: There are a great many good points in Dr. Douglas' paper that we might discuss with much profit to all present. But the matter of personal cleanliness it seems to me, is one that ought to be of special interest to every dentist, for it is a question of the utmost importance and means oftentimes success or failure. Some people are naturally careless and uncleanly, and can't appreciate the nice distinction between being clean and orderly, they should reform. Others again are unclean because they allow the push of a business that requires all their time to interfere with order and the necessary attention to decent toilet preparations. The man who is unclean because he knows no better or it is a part of his make up, may be excused perhaps more than one who allows the demands of business to so encroach upon the requirements of decency so much as to neglect to keep himself and his surroundings acceptable to his patients. If you have no time to keep your office clean, employ an assistant to look after this and perhaps relieve you of some other unnecessary labor, in order that time may be had in which to make yourself acceptable to your patients. A carefully trained office assistant is a necessity and a blessing as well as a luxury.

Personal health which makes one unacceptable or disagreeable, demands careful attention. Bad breath is especially disagreeable and can generally be avoided. When a disagreeable breath results from objectionable and filthy habits, it ought not to be tolerated for a moment by any self respecting person.

The doctor related an instance of where a well known dentist was called upon by a colored girl for some dental treatment, and because of the careful toilet preparation he made before and during the treatment, he so impressed the girl that she related the fact in the wealthy home where she lived, and as a result a large and wealthy connection became the dentist's patrons.

An appeal to the mercenary inducement is not the only or highest motive to urge to induce dentists to become cleanly, but the reaction upon the man himself will be of incalculable value, lifting him onto a higher plane of self respect and morality.

Dr. Douglas thought the dentist's cuspidore should receive more attention than it generally did. He recommended washing thoroughly and then smoking them over burnt paper. Light a ball of paper and hold over it the cuspidore until it is hot, and then set it down over the burning paper and leave over night.

Dr. N. S. Hoff. The matter of personal cleanliness is one that merits careful consideration as it is of the greatest importance, but cleanliness of operating instruments and appliances is one that is equally important if it really does not transcend all other sanitary considerations. The invariable presence in every condition of the mouth requiring the interference of the dentist, of disease inoculating influence, which necessarily must contaminate every instrument used, renders cleanliness in respect to instruments and appliances of the utmost importance. Every dentist should provide himself with simple and sufficient means for safely sterilizing every instrument used in connection with operations upon the teeth and gums; and no instrument once used should be used on another patient, and generally not on another tooth in the same mouth without its having been cleansed and sterilized. This is particularly true in regard to excavators, burs, scalers, nerve canal instruments, and rubber-dam clamps, and applies with more or less force to other appliances.

There is a statement in the paper in regard to the efficacy of amalgam as a filling material that I cannot agree with and I don't think it is the accepted belief of the profession. The Doctor says, "Nothing will preserve a tooth better than the best amalgam fillings." Amalgam as a filling material is notoriously fauity and unreliable. While it is true that occasionally an amalgam filling will have apparently preserved a tooth from the further encroachment of caries, it does not always follow that any particular skill or care were employed by the operator in making it. In most of these cases good and sufficient reasons may be given for the favorable result. The most skillful and conscientious operators have given amalgam more than a fair test; they have earnestly desired to demonstrate it a reliable filling material, and used it long after it had proved itself to them, by its continued failures, unworthy of confidence. It is not just to pick out the isolated cases where amalgam has apparently proved itself a reliable material, and draw the conclusion that the best amalgam filling will save teeth as long as any other filling material. The statement is misleading and may be looked upon as an endorsement of the material. At the same time it is a reflection upon the manipulative attainments of some of the best men in the profession. Moreover we don't think it is true that the number of good amalgam fillings will average proportionately with the number of good gold fillings.

Dr. Saunders: I have often heard that amalgam made as good fillings as gold, but I do not believe it. My experience does not demonstrate it. It is sometimes a difficult matter to determine that one filling is going to save a tooth and another will not; or that one filling is better than another when both are apparently accomplishing the object for which they were made. My reason for not believing in amalgam is not based on the fact that it always fails, but that it is more likely to fail in the average than gold. I do not think I fail in manipulating the material; I take all the necessary precautions I do with other materials; I work it dry and use all other necessary precautions. It seems to me that the fact that we are continually striving to learn to use this material in such a way that it may not prove a failure is good evidence that it is not as good a material as gold for filling teeth. I believe gold is the most reliable material for filling teeth. But it must be used skillfully, and judgment must be exercised in the selection of cases; that is the nature of the tooth structure to be operated upon, extent of caries, difficulties of approach, etc. While I believe gold is the best filling material I most decidedly hold that amalgam has a place as well as gold, cement, tin, and gutta-percha. It should be our constant aim to use the material that judgment based upon science and experience has demonstrated to be the one adopted to the particular case in hand.

Dr. Sweetnam: Much of the cause of failure in fillings is due to the fact that due care is not exercised in the preparation of cavities. Thin or weak walls should be cut away. Neither do I believe in making six fillings in the crown of a molar tooth, the fissures should be cut out and the cavities made into one. The paper suggests a treatment for capping and saving a pulp which has been bleeding; by coagulating the blood, removing the clot and then capping the nerve. I can't save pulps that have reached this degree of exposure and don't consider it practicable to undertake it. The paper also suggests manufacturing a cylinder and driving it into simple crown cavities. I don't think a filling made in this way would prove at all reliable, because it could not be made to conform to the cavity walls.

Dr. Douglas: I think my experience ought to justify me in maintaining, or at least expressing the opinion, that amalgam when properly manipulated will preserve the teeth. I have practiced in one place thirty years, and have seen fillings recently that I put in many years ago, and I have only recently seen a filling made in the first years of my practice that was preserving the tooth perfectly. I think good amalgam skillfully manipulated will preserve the teeth as well as any other material.

Dr. J. Taft: It is surprising to me that any one who has had such success in the use of amalgam as Dr. Douglas should ever use anything else. While it may be true that amalgam is a safe and reliable filling material in Dr. Douglas' hands, it has woefully fallen short of giving satisfactory results in the hands of most operators. One great difficulty with this material is that it encourages faulty and careless manipulation, there is nothing in its manipulation to call out the highest ability of the operator, and the very ease with which it is manipulated is a source of evil in more ways than one. The material itself has inherent, harmful and bad qualities which ought to debar it from use. Of its practical use, perhaps I ought not to say anything, for I have never yet inserted an amalgam filling in any patients tooth; but from what I have seen of those made by other operators I don't think I shall begin now.

Dr. Douglas: I use amalgam successfully and I can't think that others fail for any other reason than that of faulty manipulation. I am just as particular to prepare my cavity for an amalgam as for a gold filling. I work the amalgam dry, press it in strong linen or buckskin—never use chamois skin, as the fibres of the chamois will embed themselves in the material and prevent its perfect crystallization—when all the mercury has been squeezed out that is possible, it will still contain sufficient to make it pack readily. I always wash the material in alcohol.

Dr. Hoff: I do not think the trouble is in the manipulation at all. I have used all of the best and most expensive amalgams made, and have adopted every suggestion that seemed to have any reason in it, and the sum total has been, in my hands, failure. I don't think the fault is in me altogether, but I am compelled to conclude that a material demanding such nicety in manipulation, does not compensate adequately in the results secured.

The Secretary read a paper written by Dr. G. E. Corbin, entitled,

A Strange Condition. Did Arsenic Produce it?

A few months since, a small woman with fairly good health presented herself in my dental chair.

I found that the crowns of eight molars had been lost by decay to such an extent that I extracted their roots separately, and easily.

Two incisor and one canine tooth of the lower jaw, were crownless and pulpless. Three bicuspid and two incisor teeth of the upper jaw were also crownless and pulpless. These eight teeth I have since supplied with artificial crowns.

The crowns of the other two upper incisor teeth were pulpless, and nearly half destroyed by decay, but their contours have been restored with annealed gold under the mallet.

The crown of the fourth upper bicuspid was pulpless, and half destroyed by decay. It is now filled with oxyphosphate of zinc. My astonishment over this pulpless condition was greatly increased when informed by the patient that she never had toothache in her life! Half the crown of the right inferior first bicuspid was restored with gold foil.

A large gold filling was inserted in right superior first molar. In preparing the last two teeth mentioned, excavations in the dentine could be felt, but produced no decided pain. Gold fillings were inserted in several other teeth where there was no sensation in the dentine whatever, but as the teeth were firmly set, of good color, and surrounded by healthful tissues, I did not open into their pulp chambers. Another excuse for not doing so, if apology seem to be necessary, that with all of these bad teeth, she has never had an alveolar abscess! My curiosity was so great as to induce me to institute a careful inquiry concerning the woman's history and habits. In October, 1880 her condition was such as to cause her to consult a physician, so called. "The Doctor" prescribed "Fowler's solution." This the patient took in "six drops doses," three doses each day as directed, without any knowledge or suspicion of the *nature* of the solution.

Getting no better, "the doctor" was again consulted, and repeated his prescription. After weeks of perseverance in the use of the medicine, new and troublesome symptoms arose.

The number of the prescription being on the bottle, the medicine was procured of the druggist and taken with punctuality for months; the patient constantly growing worse, until, for the last six weeks of its use she was confined to her bed, in a darkened room, with inflammation of the conjunctivæ, suffusion of eyes, feet and ankles swollen, general anasarca in fact, and stomach too irritable to retain any solid food. In short, she was dangerously ill from slow arsenical poisoning, extending over a period of eight months; from October, 1880, to June, 1881.

She reports that her teeth were all sound at that time—ten years ago.

As there is no effect without a cause, the question for consideration is to determine the cause of such extensive devitalization.

The fact that arsenic is made use of for the destruction of pulps, by virtue of its caustic effect when locally applied, will throw no light on this case. For months the whole system was saturated with arsenic and the vital powers greatly depressed in consequence. The usual symptoms of slow arsenical poisoning were present. That the coats of the blood vessels were enfeebled, collapsed, was sufficiently proved by the general anasarca. The congestion of the capillary blood vessels and effusion into the cellular tissues about the eyes, in this, as in other cases, was well marked and one of the earliest symptoms. A similar congestion in, and effusion from the capillary vessels of the pulps of the teeth, must have taken place. From the intolerance of food and general functional inaction, the whole system suffered from deficient nutrition.

The privation of nutrition from the pulps may have been greater than from any other portion of the system. Both anatomical and mechanical causes can be assigned for this opinion.

The congested condition of the capillaries may have been such as to greatly restrict and finally entirely intercept the flow of nutriment through the small and unyielding apical foramina. The arsenical solution was taken for eight months, and the process of destruction of the pulps may have continued for many months, or even years, longer. Indeed, the diminished sensibility of the dentine in teeth recently filled, indicates that the process of devitalization is still at work.

This slowness of destruction has given time for the disposition of the products of decomposition, through the process of absorption and elimination, as the result of increased glandular activity. Certainly, this very strange condition had a cause. If the above history and suggestions throw no light upon it, will some one, better qualified, give us the true solution?

DISCUSSION.

Dr. Douglas: As the secretary read and I listened to the description of the symptoms as described in the paper, I said to myself how true and perfectly are the symptoms of arsenical poison here described, corresponding exactly with the homeopathic materia medica description of the manifestation of this drug. I have knowledge of a case in which the pulps of a child's teeth were destroyed by a similar exposition of this drug.

Dr. J. Taft. The physician or dentist ought to take into consideration the susceptibility of the patient when about to administer drugs that are capable of producing by over dosage harmful functional disturbances. And as these conditions are not always readily recognized it is a wise precautionary measure to begin the administration with the minimum doses, and inform the patient of the nature of the medicine used and the danger of prolonging its use or over dosing. Had such precaution been taken in the case related by Dr. Corbin much suffering and injury would have been spared.

Serious mischief has aften occurred from the use of arsenious acid applied topically. An unnecessarily large dose or careless use of a proper quantity has resulted in serious injury. It is always good practice to be on the safe side when using poisonous drugs; therefore begin with small doses and increase as the system will tolerate and the circumstances indicate.

DR. JOS. LATHROP. Why was it, Dr. Taft, in this case, related by Dr. Corbin, that the pulps were destroyed and other tissues were not devitalized?

DR. TAFT: It is probably due to the fact that the inflammation set up in the system generally, affected also the pulps, and these organs being inclosed in solid unyielding walls, the capillaries become clogged and all nutrition being cut off death ensued from starvation.

[Dr. Corbin in the paper expresses surprise that no alveolar abscess from any of these teeth had taken place. This can easily be accounted for by the fact that these pulps died because of the inflammation consequent upon the administration of the arsenic systemically, consequently no micro-organism could be present to produce putrefaction, which would be the case if there had been an external opening from caries to the pulps. The absence of toothache can also be accounted for from the fact that the presence of the arsenic in the pulp tissue had narcotized the nerve endings to such a degree as to incapacitate them for conveying impression in the normal manner, and the death of the nerve cells and atrophy of the other tissues without any putrefactive change produced no inflammation in the contiguous tissues, which were not destroyed by the general imflammatory conditions. It would be interesting to know whether the peridental membrane was at any time unduly sensitive.—HOFF.]

DR. DOUGLAS. I put some arsenical paste in the tooth of a boy thirteen years old, and told him to come back to me in twenty-four hours. It was ten days until I again saw him, and I extracted the tooth at once; because the blood corpuscles had become disorganized and broken up and passed into the tubuli of the dentine staining the whole tooth to a bright pink color. The utmost caution should be observed in making applications of arsenic to children's teeth, and in no case should it be permitted to remain there a long time.

The subject was passed and the meeting adjourned to meet Wednesday morning at 9:30 A. M.

WEDNESDAY.

Meeting called to order at 10 o'clock A. M. by president Lathrop; minutes read and approved.

DR. N. S. HOFF read a paper entitled,

SYSTEMATIC MEDICATION.

The caption of this paper implies that, in our mind at least, there is such a thing as unsystematic or careless medication. The evidence may be had by noting the methods of our neighbors, journal articles, cases which fall into our hands from other practitioners, or a visit to the dental offices of the profession, and an inspection of their medicine chests. Noting the medicines generally found and their condition. In some cases quite a collection of bottles containing various remedies; usually a large per centage will be compounds made after some published formula that the author used successfully, but we find this bottle unused, —indicated by the dust which covers it,—because the formula was not made to cure everything from toothache to necrosis, and is therefore set aside for the more reliable creosote or carbolic acid bottles, which have a prominent place on the front shelf and are evidently much patronized.

In the majority of offices the armamentarium will be found to consist of carbolic acid, creosote, tincture of iodine, tincture of aconite, arsenious acid, aqua ammonia, alcohol, tannic acid, etc. This is not such a bad equipment, and possibly it may be all the owner's intelligence requires, but it is not much in advance of the dental outfit of forty years ago. It is not the meagerness or faulty selection of remedies that we complain of so much, as ther empirical use. For an intelligent use of the list given above will equip an average practitioner to cope with the requirements of his business.

It ought to be a matter of concern to us all, that in this day of progress and enlightenment, because of the universal dissemination of knowledge through the dental periodical literature and accessible dental societies, text books, etc., that more progress has not been made in the scientific application of medicines to the cure of dental diseases. It would seem that all the newer remedies, especially the approved ones, should be in the hands of the profession, not only that the patient may have the benefit of their use, but that by a wider use, sufficient and accurate data might be quickly secured as to the action of these remedies in the treatment of diseases of the dental tissues.

It is the careless use (we trust it may not be due to ignorance) of dental remedies that convinces us that our medication is, as it is frequently practiced, empirical and unsystematic, and consequently oftentimes tedious, and inefficient if not harmful.

There seems to exist the same lack of uniformity as to methods of procedure in the treatment of diseases of the dental organs, as in the methods of operating for their preservation by filling. And it is highly probable that the reasons in one case are the same as those which obtain in the other. The methods of filling teeth have not been evolved from the brain of the scientist or from his laboratory; but they have come with years of practice and experience from the men who have by their indomitable energy and perseverance amidst business perplexities, conceived the ideas, frequently worthless if not injurious, generally crude; and which it was necessary always to submit to the tedious and expensive—to both patient and dentist—practical tests of unscientific experimentation and development.

To-day our conceptions are scrutinized by scientific dentists, for our profession is now blessed with such men, and we are saved the long and tedious experimentation involved in the practical tests of former years. While this is particularly true in regard to the more practical affairs, it is also true that our scientific dentists are at work upon causes and conditions in disease. Physiological and pathological dental tissues, and the action of reagents upon such structures, are better understood now than ever before, and the fact that no scientific classification of dental drugs and diseases is known to or used by the mass of the profession, is undoubtedly due to the fact that the profession has not kept pace with the advance of its own and other kindred sciences.

To illustrate the point we wish to make, we will take the liberty of referring to the drugs most commonly used by dentists. The old-time creosote and latterly carbolic acid, have retained their hold upon the dental profession thus long, not because of any particular virtue either one possesses, but because of their combination of properties. Carbolic acid is a stimulant, coagulant, escharotic, germicide, and antiseptic. It may be compared to a shot gun load, as it meets so many requirements, some one or more of which are generally present in every case requiring medication; but like the shot gun load it does not go singly and directly to the mark as a rifle ball does, but may scatter and destroy or mutilate other structures that it is exceedingly desirable to preserve. This agent undoubtedly has been a great boon to the profession and many cures have resulted from its use, but too often at great cost to other structures has this desirable result been obtained.

So long as we were working as it were in a very dim light in regard to the nature of disease, this agent was a great boon, but now that we know definitely what inflammation is, what causes it, and exactly how it takes place, and what the progressive stages are, and can also foresee results, it does seem that we ought to begin to apply remedies directly and definitely. It has been satisfactorily demonstrated to us that we cannot have suppuration without the presence of a micro-organism; and we have also been shown that certain agents are hostile to the micro-organism and some are capable of completely destroying them; and consequently with our limited but distorted vision we see no necessity for the application of any remedial agent other than a germicide—under some circumstances the worst possible agent that could be employed. This practice is no less wrong and unsystematic than to apply the one agent as a cure all in every case. Such a proceeding is about as systematic and scientific as it would be to insert an artificial denture in a mouth full of diseased, loosened and tartar covered teeth, and expect a healthy and satisfactory healthy process to take place, simply because we have used a material upon which to construct the denture, that experience has taught us is likely to subdue inflammatory conditions of the mucous membrane, and which we hope, because of careful adoption and skillful construction, will bring about the desired healthy condition. Just as certainly as some preliminary work is demanded in this illustrative case, so certainly is there generally a necessity for preliminary work to that of medication. In the treatment of diseases of pulps, alveolar abscess, pyorrhœa alveolaris, etc., some things are needed to be done before any medication will be beneficial. The pulp must be freed from all foreign and encumbering substances, the abscess must be so opened as to secure free and certain drainage, the salivary calculus must be removed and the teeth ligatured together if loose; many other simple and mechanical details must be attended to before any medication can be successfully applied. Douches or injections of warm sterilized water should follow the surgical means, in order that all fragments loosened by the instruments, as well as the blood and pus contained in the tissues which might be coagulated by some of the medical detergents, should be removed, as such a coagulum would remain as an irritant and hindrance to the direct and free application of subsequent medical agents to the diseased structures.

The next agent to be applied is a disinfectant. A combination deodorizer and germicide can usually be applied, as most germicides are more or less deodorizers. The parts are then ready for an antiseptic dressing and a period of rest. An antiseptic should be selected that will not become decomposed or dissipated too quickly, but by its slow decomposition and liberation of its serilizing agent, will remain for some time in contact with the infected tissues, preventing the development and growth of micro-organisms, and giving time for the enfeebled tissues to take on a more healthy function. If the tissues show no disposition to heal under this mechanical and antiseptic treatment, supposing it to have been thoroughly and carefully done, the indications then would be for the application of curative agents, locally stimulants or irritants, systemically tonics, alteratives, etc. Just at this point there is an excellent opportunity for the dentist to display his judgment if he is happy enough to have any that is based on medical science. Not that it may be necessary to supplant the physician, but to advise with him and ask his counsel and help in correcting systemic disorders, which very frequently are of sufficient force to thwart all well directed efforts for the successful treatment of local disturbances, although the active cause may be local in its nature.

Frequently it becomes necessary to destroy or remove a portion of the tissues which have become so enfeebled, that they will not take on again the normal function. For this surgical treatment is generally preferable, but frequently it is not practicable, and we are forced to resort to the escharotics, painful and difficult to control though they may be. This treatment must be followed by the same treatment indicated above; detergents, disinfectants and antiseptics, accompanied by astringents or stimulants, when indicated. A successful issue may be confidently predicted on the basis of science and clinical procedure if the details of the above outline are carefully considered. The point that we want to emphasize is, that agents of a single and definite action, when applied systematically may be expected to accomplish better results, quicker and with less destruction of valuable tissues, than those possessing numerous virtues, some of which it is not desirable to exhibit in peculiar conditions, because of the possibility of producing more harmful than beneficial results.

To illustrate, if possible more vividly, the systematic application of one class of approved remedies in the treatment of diseased dental structures, I would like to make the following tabular classification for use in the treatment of dental and oral diseases where suppuration is present. I would give preference to the first named agent in each class.

Detergents,	1.	Manipulative measures.	Both usually.
	2.	Warm sterilized water.	
Deodorizers,	1.	Permanganate of potassium.	
	2.	Peroxide of hydrogen.	
	3.	Listerine.	
Germicides,	1.	Bichloride of mercury.	
	2.	Peroxide of hydrogen.	
	3.	Carbolic acid.	
Antiseptics,	1.	Aristol.	
	2.	Black's 1, 2, 3 remedy.	
	3.	Boracic acid.	
Stimulants,	1.	Alcohol, and its tinctures.	
	2.	Aromatic sulphuric acid.	
	3.	Oil of cloves and sulphate of copper when it is desirable to have an astringent effect.	
Escharotics,	1.	Carbolic acid.	
	2.	Mineral acids.	
	3.	Arsenous acid and potassium hydrate.	

DISCUSSION.

Dr. J. Taft: Sterilized warm water is a most excellent detergent, but it is in very many cases insufficient. I have used the warm water to which a small quantity of soap had been added. If some alkali, such as the bicarbonate of soda was added to the water, the solvent property of the water would be increased without danger of introducing any harmful agency. I use pepsin with satisfaction in the treatment of exposed pulps that are encumbered with much disorganized tooth structure or other debris, it has a very nice and satisfactory action.

Dr. C. S. Case: I don't think warm water as a detergent can be compared with peroxide of hydrogen, which by its evenescence throws out mechanically much foreign material and thereby cleanses the cavity, while the elements liberated by its decomposition, break down and render soluble the insoluble materials contained in alveolar cysts, etc.

Dr. Hoff: The peroxide of hydrogen that is placed upon the market is not free from acid and its use in the treatment of teeth having foul pulps or alveolar abscesses through the pulp canals is not desirable, because of its solvent effect upon the hard tissues of the root. Then again it is capable of coagulating pus in a closed pocket, where it will remain for sometime as an irritant before it can be dissolved and washed away. Consequently the use of peroxide of hydrogen should always be preceded by sterilized warm water to free the cavity from coagulable material.

Adjourned to meet at 2 p. m.

The association was called to order at 2 p. m., and Prof. C. S. Case in lieu of a paper gave a lecture on correcting Irregularities of the Teeth.

When the majority of dentists undertake to regulate a set of teeth, they immediately devise and construct a plate with springs and other attachments which are inconvenient for the patient to wear and which I think are entirely unnecessary. With a plate there is no definiteness as to the extent of the movement secured and its action is usually continuous allowing no time for rest and recuperation. The plate is also more or less uncleanly. I use the "coffin plates" for spreading the arch, but never for moving teeth. I prefer an appliance with which exact and definite movements may be secured and periods of rest may be secured.

I also want to know what amount of pressure or force I am exerting. Exactness of movement cannot be obtained by the use of rubber bands, springs and ligatures. These springs and bands, because of their continuous force, are capable of doing great harm. The changes which the tissues are compelled to undergo in the process of regulating teeth, are not sufficiently understood. More attention should be given to this matter, our text-books do not give it the consideration it deserves, and it should be taught more thoroughly in the colleges.

The "Angle" system of regulating, by means of screws, so arranged as to produce the desired movements with certainty and exactness, by manipulating at intervals the screws, is the most definite and scientific method of changing the position of teeth known.

The Doctor here described the methods of constructing the different kinds of jack-screws, etc., for use with this system, exhibiting a great many models with appliances in place, showing how the different forms of irregularity could be satisfactorily corrected by this method. The appliances are all made of German silver, except the nuts for the screws which are cut from five cent nickel coin. For bands No. 16 German silver wire is rolled down nearly as thin as it is practicable to roll it on an ordinary mill, considerably thinner than No. 36 plate gauge. Its toughness and high fusing power admirably adapt it for easily fitting and soldering, and even though very thin it will have sufficient strength to resist the force of any traction to which it may be subjected. The bars upon which the thread is cut, are made of German silver wire, the size varying with the ideas and convenience of the manufacturer. The Doctor uses No. 18 wire and draws it down somewhat in order to temper or stiffen it, and so that it is large enough to cut the thread with No. 6 hole of the Martin twin hole screw-plate. From this hole in the screw-plate a thread is cut on a piece of softened steel wire to make a tap for cutting the thread in the nut. The point of this tap is then dressed to a triangular point and tempered. Holes of the proper size are drilled into the nickel coin and the tap run through them, cutting the thread. The coin is then sawed into little square blocks making a nut which can afterwards be filed to any desired size or shape so as to fit the wrench used in manipulating them. Considerable care is required to make all these things accurately so that when the appliance is made and placed in position its movement will be positive and easy. The tubing into which the bars fit is made by cutting strips of German silver plate, No. 28 plate gauge, about one-fourth inch wide, and after turning up the edges by stamping into it a round excavator handle to expedite its passage, it is drawn through a wire draw plate, successively through the largest holes first, down to the one of proper size, when it will be found that a nice piece of tubing into which the jack-screw will exactly fit, has been obtained. This can then be cut into such lengths as the case may require. These jack-screws can be made to pull or push, and one screw can be made by adding attachments to its tube, or the nut, or the screw itself, to exert force in four or five differeut directions, while the screw is only turned one way. The versatility of the system cannot be fully appreciated unless one sees the application to models in which almost every variety of irregularity has been corrected. The appliance may be gold plated after it is made if desired, but this is not necessary, as the German silver does not corrode although it tarnishes in the mouth.

Dr. Parker, of Grand Rapids, suggested that when tempering the steel taps, yellow prusiate of potassium mixed with flour and water so as to make a paste, would be an excellent mixture into which the steel tap should be plunged before it is heated. It prevents the steel from scaling and thus destroying the edges of the delicate screw threads.

Dr. H. H. Jackson, of Detroit, exhibited a number of articulated plaster models showing the manner in which cases of irregularity had been treated by means of springs made of piano wire and attached to the teeth by means of wire cribs, dispensing with all plates. He also gave a clinic illustrating the method of making the cribs and springs. The method is the same as that advocated of Dr. V. H. Jackson, of New York city, and referred to in the report of the proceedings of the thirty-first annual meeting of the American Dental Association on pages 510 and 515 of the Ohio Journal for November, 1891.

Dr. Hoff exhibited a model with a plate, which was used by Dr. Bödecker, of New York city to draw back the upper incisors, which were very much protruded and at the same time expand the arch which was contracted to a V shape. A rubber plate is made to cover the vault of the jaw, into this a flat gold band is vulcanized, passing out between the second bicuspid and first molar and thence upon the labial faces of the teeth around to the corresponding place on the opposite side of the arch where it passes in between the teeth and vulcanized into the rubber plate. The rubber plate is sawn on both sides of the palatal ridge three fourths of the distance, beginning between the lateral incisor and cuspid, towards the posterior edge of the plate, on a line midway between the median ridge of the hard palate and alveolar process. A Talbot wire spring is then bent to conform to the plate and the ends inserted into the split plate opposite the cuspid teeth while the coil of the spring lies in the median line and near the posterior edge of the plate. The spreading of the spring causes the plate to expand and this carries outward the cuspid and bicuspid teeth causing a widening of the arch, at the same time the spreading of the arch puts a tension on the gold band which draws the incisors backward. Dr. Bödecker claims this is a very effective apparatus for the purpose.

Evening Session.

At the evening session Dr. Hoff exhibited a number of new appliances and instruments secured through the kindness of the manufacturers and dealers. Including Dr. Timme's method of making glass inlays; a new base plate material; a new form of crystal gold; flexo separating slips; fissure burs; electric root driers; electric gutta-percha filling packer; composition, cement and asbestos filling material; sand paper strips; disk mandrels, etc., etc. He also exhibited a case of specimens illustrating a method of making a compound filling of cement and gold. The larger part of the cavity is filled with cement and while it is yet soft a little cake made of gold foil approximating in form and size the cavity, is forced into it and the cement quickly set by injecting warm air into it. This little cake of foil retains a good receiving surface for gold foil, with which the operation can be completed in the ordinary way. The idea comes from Germany, and is more interesting because of the earnest endeavor of its author to do something for his profession, than that it will ever be extensively adopted. But it is possible this idea in some modification may at times be a very acceptable method for overcoming a perplexing operation.

There being no further papers to be read it was voted to elect officers and adjourn this evening.

The officers elected were: President, H. C. Corns, Detroit; 1st Vice-President, G. E. Sanders, Saginaw; 2nd Vice-President, N. S. Hoff, Ann Arbor; Secretary, J. Ward House, Grand Rapids; Treasurer, G. H. Mosher, Jackson.

Executive Committee: L. F. Owen, Grand Rapids: E. C. Moore, Detroit; Wm. Cleland, Detroit.

Local Committee of Arrangements: G. E. Sanders, Saginaw; R. P. Alden, Saginaw.

Supervisor of Clinics: W. A. Dorland, Grand Rapids.

Board of Censors: J. W. House, Grand Rapids; J. L. Gish, Jackson; J. L. Sweetnam, Manistee.

University Visiting Committee: J. B. McGregor, Port Huron; J. Lathrop, Detroit; J. A. Harris, Pontiac; G. L. Field, Detroit; H. H. Jackson, Detroit.

Legislative Committee: A. T. Metcalf, Kalamazoo; W. H. Dorrance, Ann Arbor.

The Treasurer reported a balance on hand of $187.09 after paying all bills.

The association voted $25 to the American Dental Association to assist in carrying on the work of examining the prehistoric crania of the country.

It was voted to hold the next meeting at Saginaw June 7, 1892. A vote of thanks was extended to Drs. Conway and Williams for the eminently satisfactory way in which they had provided for the comfort and convenience of the members during the meeting.

Adjourned.

DENTAL HEMORRHAGE.

BY MR. J. E. EDWARDS, ENGLAND.

I HAVE selected this subject because it is included in my curriculum, and because it is a matter of great interest, and one of the most important branches of surgery. As it is a most common casuality of extraction, it should always have a chief place in our minds.

Hemorrhage is divided into three kinds, arterial, venous, and capillary; and these again have been classified according to the causes, but alveolar hemorrhages may be said to be included under the heads of Traumatic, Vicarious, and Constitutional. All alveolar hemorrhage may be said to be traumatic, but it would be better to confine this term to the hemorrhage which always follows the extraction of a tooth or teeth—the primary. This usually stops after a short time, and is very simple. In the majority of cases, it ceases in about ten minutes, and does not cause any anxiety either to the operator or patient. Cases of severe hemorrhage are very rare, when we take into cosideration the number of teeth that are extracted, and herein lies the danger; because the rarity of the occurrence increases the danger when it does occur inasmuch as it diminishes the apprehension, and therefore the precaution, and where a case of prolonged hemorrhage does occur, the operator is at a loss what to do, and the patient loses a greater quantity of blood than would be done, were he ready to cope with the flow, and the longer a case of hemorrhage is allowed to go on before it is treated, the more difficult it is to treat.

Secondary hemorrhage is more complex, but it is distinct from the condition of hæmophilia, inasmuch as it is dependent on conditions which are merely temporary, and which make the patient for the time being a hæmophile. Even experts have fallen into the error of putting down all hemorrhages which recur to hæmophilia. The most frequent explanation of secondary hemorrhage is that it is vicarious to some other blood flow. Secondary hemorrhage is not of a very serious nature, though, sometimes very troublesome; it yields to treatment, and is not permanent.

Under the head of constitutional hemorrhage comes hæmophilia. This is a very serious disease, and its pathology is not quite understood. The arteries have an uncontrollable tendency to bleed, and blood oozes out of the capillaries on the most trivial wound, even a scratch will cause severe bleeding, and defy all efforts to arrest it. This condition is happily of rare occurrence in this country, and has been studied chiefly in Germany, and from this we are led to believe that it is more common there than here. It is of great importance to the dentist to know about this disease, because at any time a person suffering from it may want to have a tooth extracted, and the operator finds himself confronted with bleeding that defies all attempts to stop it, and the patient dies from loss of blood.

It is not usual for a dentist to ask a patient for any history before extracting a tooth, or he could be on his guard; but until the bleeding does occur, there is nothing to direct his attention to the condition of the bleeder, as the person suffering from hæmophilia is technically termed. True, there are said to be symptoms, the bleeders being usually fair, with bright eyes, and thin transparent skin, bright intellectual countenance; but these signs are clearly of no value to the dentist, as no one would feel justified in refusing to extract a tooth on account of a patient having these peculiarities.

In a case of a suspicious nature, or in any case where many teeth are to be removed, it would be advisable to inquire into the patient's history whether there is tendency to excessive bleeding, as to be forewarned is to be forearmed, measures could be taken, to cope with the case, if a clue was obtained from the patient. Coleman mentions a case where a patient warned the dentist of the bleeding, and measures were taken to check it, which were quite successful. Some patients have been aware of this tendency to bleed, having experinced it before and after an extraction, and would rather endure any amount of toothache than have this hemorrhage after having the tooth out.

In hæmophilia, blood does not spurt out, but it is rather a continuous flow welling up in the socket for days, until the patient is in a very weak state. Cases have been recorded where the bleeding stopped for a while only to recommence, and no aid being at hand, the patient died from loss of blood. Tomes mentions a case of this latter kind, and though in this instance it was not fatal, it was very alarming. A patient had a lower bicuspid removed, and the blood ceased to flow from the socket in less than half-an-hour. The patient had to go a short distance by rail to reach home, but before he arrived the bleeding had recommenced, and it was some hours before it could be arrested. The hemorrhage diathesis in this patient was very marked, and he had been dreading the operation for some time, on account of the severe bleeding which had occurred when teeth had been extracted for him on previous occasions. Where this predisposition is known to exist, every effort should be made to preserve the tooth, and it should only be extracted as a last resource, and indeed, one authority states that the dentist should absolutely refuse to perform the extraction.

The pathology, as I have said, is not properly understood, but two chief reasons advanced, are (1) the want of the property of forming a clot, and (2) a diseased condition of the blood vessels. The predisposition to bleed is often hereditary, usually through the mother, in some cases through the father; and in one case recorded, were the patient died from hemorrhage, it was thus, the father having died from an attack of epistaxis (nasal hemorrhage), and the patient himself, it was found out, just before he died, had on one occasion nearly bled to death from the same cause.

It is a fact that habitual drinkers make bad subjects for accidents or surgical operations; their wounds, as a rule, being very troublesome, and being a long time in healing, and alcoholic excess has been put forward as a cause for some severe hemorrhages. In a paper read before the Odonto-Chirurgical Society of Scotland, by Mr. J. B. Nicol, attention is drawn to the fact that this may be a possible cause. Mr. Nicol had occasion to see a patient, in a good position, who had ruined his constitution with drink. The first lower molar on the left side was loose and causing him a good deal of irritation, so it was extracted, and as the bleeding was no more than usual, no extra precaution was taken. The hemorrhage did not cease, but continued in the form of a slight dribble all day and night, and the patient becoming alarmed had the socket plugged. This checked the bleeding but after a few days intermission, it broke out again, though not so profusely as before, and after being replugged, finally ceased. In this case it was noticed that the gums, tongue, and surrounding tissues looked perfectly rotten, and it was easy to believe that a slight scratch of the gums might easily set up another attack of bleeding.

I will now pass on to the various treatments employed in arresting hemorrhage; and upon this the welfare and possibly the life of a patient may depend. The treatment may be either local or general, and the local treatment may be said to be of two kinds—(1) the chemical action application which causes the vessels to close and hasten the formation of a clot, and (2) the effects of pressure. In the case of a simple profuse hemorrhage the treatment need not be very vigorous. Ice is a good remedy, though difficult to apply; hot water has its advocate also, but it must be as hot as it can be borne, and not be lukewarm, as this condition tends to oppose coagulation. In more severe hemorrhages various remedies are said to be very effective; among these are carbolic acid, nitrate of silver, and perchloride of iron. Matico leaf is said to be a splendid remedy, and one authority states that this has never failed in his hands, even when all other remedies had failed, and when the patients appeared to be fast sinking. It is used as follows: The leaf should be immersed in water for a few minutes and then rolled up (the rough surface of the leaf outwards) with as many cylinders as there are sockets. The socket should be washed and cleaned with cotton wool, and then the cylinders should be packed tightly in with a plugger. After this, layers of wool should be packed until the alveolus is filled a little above the surface of the gum and upon this a pad of wool about the size of a chestnut should be placed, so as to extend over the adjoining teeth, and which is pressed upon when the mouth is closed. The mouth should be kept tightly closed by a bandage passed round the head under the chin. When opening the sockets it is advisable to take away first of all the upper pad of wool and leave the plugs in longer, as hemorrhage is likely to recommence if they are suddenly opened. Lint steeped in the various styptics mentioned may be used with success in many cases. Stuffing the socket with soft wax has been advised, under the supposition that it would mould itself into the shape of the cavity, and thus stop the bleeding, and this may be successful where other methods have failed, and is worthy of a trial. The restoration of the extracted tooth into the socket has also proved successful, especially in cases where the incisors, canines, or bicuspids have been extracted. In many cases syringing the cavity with cold water will remove the clot and aid the contraction of the vessels. Salter suggests that pressure on the common carotid artery on the side where the hemorrhage is occurring might arrest it, or at least assist in the treatment, and he bases his suggestion on a case which was successfully treated in this manner at the London Hospital. A man had sustained a severe fracture of the lower jaw, lacerating the inferior dental artery, and there was a wound into the mouth, through which profuse hemorrhage occurred. Ligature of the carotid artery was thought of, but it was found that pressure on the artery in the side of the neck by means of the thumb or points of the fingers controlled the bleeding, but on removing the fingers it immediately recurred. Several of the students undertook to keep up the pressure, relieving each other from time to time, and it was found after pressure had been sustained for two hours and a half that the bleeding had ceased. Tannin and turpentine seem to be the most successful internal remedies, and one gentleman holds that tannic acid will stop any hemorrhage caused by tooth extraction in from half an hour to one and a half hour's time.

In spite of every effort, fatal cases of hemorrhage do occasionally occur, and as there is an uncertainty about cases of hemorrhage, let us urge upon you the vital importance of having everything necessary at hand; so that if a case happened, no time would be lost in treating it; for the longer the delay the greater the risk; and delay might mean the loss of a patient's life.

NOTE ON AN EXAMPLE OF REFLEX ACTION.

BY WILLIAM R. TUCK, L.D.S., ENGLAND.

For some time past, my mind has been much exercised in the study of those almost endless forms of disease which are often forcing themselves upon our notice, in this civilized nineteenth century. Many of these affections are of such a novel and complicated character as to make diagnosis difficult to the general practitioner.

I will now narrate a case of reflex action which has recently come under my notice. A lady about thirty years of age had been bedridden for three years from what was pronounced to be a spinal affection, for the whole of that time she had been under medical treatment, blistered, leeched, and medicated, *ad nauseum*, with no abatement whatever of her distressing symptoms. The case was first mentioned to me by a friend who knew I had given considerable attention to diseases arising from reflex neurosis, and which in the majority of cases I had traced to diseased teeth.

On my first visit to the lady in question, I was informed that her usual health was fairly good. On examination of her mouth I found two lower molars, one on either side, in a state of necrosis, they had been stopped with amalgam. I suggested the advisability of removing them, and that without delay, to which she demurred on the ground that they gave no pain; that however, proved conclusively that the suffering in the spine arose from those dead teeth, and was of a reflex character, I explained to her that was the origin of such affection. After I had strongly impressed this upon my patient, she submitted to have them extracted. In the course of a few weeks I had the satisfaction of hearing that she was much better, and making rapid advances towards recovery. I found it necessary to explain that the cure *might* be prolonged, though the cause had been removed, owing to the protracted suffering, at first reflex, becoming absolute. In order to expedite the recovery, I advised the use of small doses containing iodide potassium, with aconite, which seemed to aid in bringing about the happy result mentioned.

Prosthetic Dentistry.

[This department will be devoted exclusively to Prosthetic Dentistry, including Crown and Bridge-Work. We shall be pleased to receive from our readers such practical contributions, short items or queries upon this subject as they choose to contribute.]

LOWER TEETH.

BY PROF. L. P. HASKELL, CHICAGO.

If there is any one thing in the experience of the dentist that is especially annoying it is pertaining to the insertion of *lower teeth*, full or partial.

From the nature of things the patient cannot, as a rule, derive the satisfaction from their use that results from the use of the upper set. As I say to them in explanation of the subject, the upper set covers a large surface, and is held in place by atmospheric pressure, while the lower set, in a large majority of cases, simply sets upon a narrow ridge, with no atmospheric pressure except in rare cases, and is easily moved by the action of the muscles.

In rare instances there is found a broad, high ridge; such cases are of course favorable, but my experience has been more with cases with no ridge at all, but flat and sometimes depressions. For some reason, not satisfactorily explained, there is more absorption in the lower jaw than the upper, even when no plate has been worn, as is often seen in those cases where the bicuspids and molars have been missing for many years.

Additional *weight* is an advantage in lower dentures. It is absolutely necessary that the plate should be sufficiently narrow not to be lifted by the muscles, and especially upon the lingual side, where often exists a mass of membrane which lifts higher than the top of the ridge. Upon the labial side the muscles, and even the membrane lifts almost to the margin of the ridge by the movement of the lips. I have had occasional cases where the outer margin of the plate had to roll upward instead of downward.

And yet with all these disadvantages it has seemed to me preferable to wear a full set rather than a partial. Although I have not advocated the extraction of the six anterior teeth, I have seen cases where I was sure the patient would have better success with the pressure distributed over the whole surface rather than upon the posterior alone. Then again the partial sets are always giving way under the pressure they receive, and as the plate settles, the portion of it which passes behind the anterior teeth will crowd upon the membrane at the necks of the teeth. For this reason the plate should never be fitted just to the necks of the teeth as is often done, for then great harm results from the points pulling upon the membrane causing injury to it and discomfort to the patient. These plates should be extended well up on the necks of the teeth. The plate will set the steadier for it.

Recently, however, in view of the trouble and annoyance so often arising from wearing full sets, I have been greatly impressed with the value of retaining even a single tooth if it be firm, or a root, in order to secure anchorage for a plate.

My attention has been especially directed to this in the use of the method of Dr. Stedman, of Laporte, Ind., which I am sure is proving a complete success, and great relief from a long-felt need.

The method is this: Instead of using an ordinary clasp of platinized gold, a band as wide as the full length of tooth, even though it does show, and extending around the tooth, or as far as an adjoining tooth will admit, but always open made of 24 gauge gold without platinum. Solder a spur to the lingual surface to hold it to the rubber. Take the impression with the clasp *on the tooth* as this is the only method of securing the perfect adjustment of a clasp to a rubber plate. If only a root remains crown it, and fit a band to it as before described. If the tooth to be used as an anchorage is badly shaped, for a band to be fitted to, *crown* it first. I have had success with this method such as I never realized before.

PROSTHETIC DENTISTRY.

Dr. G. E. Andrews: In taking impressions for partial plates, where the teeth are long and irregular, a good plan is to fill the spaces between the teeth with plaster, allowing it to harden—varnish and then take impression over all—after removing impression, take out the "cores" and place them in position —in impression.

Oil should not be used on impressions or bites as it softens the plaster coming in contact with it—and its uneven flow prevents obtaining a correct model—collodion, sandarac varnish or soap are better, but I prefer a thin shellac varnish—paint the impression and soak in water a few minutes and then run cast; as soon as it hardens, remove impression—result—a hard smooth model.

Rubber plates should be of uniform thickness, care being taken in waxing up to avoid unevenness.

Surfaces coming in contact with the mucous membrane should be smooth. A cast washed with a thin solution of silex just before packing with rubber will produce a smooth and polished surface without altering the shape of the model.

Dr. Andrews seldom uses sections; uses one thickness of wax and does not use the blow-pipe or spatula after waxing. This gives evenness and strength to the plate. Always use wax and plaster-of-Paris.

Dr. Jones uses mandrel for making cavities in porcelain teeth and uses corundum flour and water.

Dr. W. E. Dadmun: It is often a difficult matter to make a full upper denture work satisfactorily when the patient has only the four or six lower anterior teeth. I always try to impress upon the patient the value of a partial lower plate to be used in connection with the upper. But if only the upper one is to be made, in adapting the teeth to conform to the circle of the lower teeth, leave plenty of room for the lower teeth to pass inside of them without touching, thus preventing tipping at the back. Have the lower teeth bite upon a floor or shoulder of rubber built upon the upper plate from the pins of the teeth back about one-eighth of an inch or thereabouts. Also regulate the length of the bite with this shoulder, building it down toward the points of the teeth as the case admits.

The lower teeth biting as they do upon this floor extend a more universal pressure all over the plate, and usually prevent tipping. In nearly all cases where the lower teeth are anywhere near the normal position and the patient has common sense, a plate made in this way will be a success.

Faulty articulation is the principal cause of plates tipping.

In articulating the teeth of full dentures care should be taken not to let the anterior teeth come into absolute contact. Let all the pressure be upon the bicuspids and molars.

After adjusting the two plates in the mouth and they seemingly articulate perfectly—to be sure of it take a thin right angle burnisher, tell the patient to bite hard, then try to force the blade of the burnisher between the teeth and try to turn the blade up or down. You will often find that the plates do not come together from equal pressure but from the unequal pressure of one side only forciug one or the other of the plates from the ridge and tipping it so that the teeth meet.—*Minn. So., Review.*

A VALUABLE USE FOR COPPER AMALGAM.

We glean from the English journals (we regret we have been unfortunate to lose the issue) what we think a valuable use for copper amalgam. It is in the aid it offers in the construction of a plaster model whereon a band or ferrule is to be accurately fitted to the face of the root. Or even where a clasp is to be nicely adjusted to the tooth it is to encircle, the suggestion affords a valuable aid to the workman.

The root end being prepared, an impression is taken with plaster-of Paris. The depression in the impression representing the root end is filled with softened copper amalgam and a piece of brass wire filed to a double headed pin, or bent into the form of the letter Z, is pushed into it. The copper amalgam is permitted to set, after which the impression is taken with plaster in the usual way. When hard the impression is cut away and the model produced.

The root end, to which the band is to be fitted will be of hard copper amalgam, which will not wear away when this is being fitted.

The procedure is the same when copper amalgam is used to fill the depressions in the impression which represent the teeth that are to be clasped.

The copper amalgam may be recovered from the model, after the work on the model is finished, and used over and over again.—Dr. T. F. Chupein, *Dent. Off. & Lab.*

Dr. C. H. Darling's Double Backing for Richmond Crowns.—I use pure gold about No. 38 to 40 standard gauge. After grinding the tooth to fit the ferrule cut out a piece of gold leaving it long enough to cover the tip of the tooth at an angle of 45 degrees; cut the piece a little longer so the solder will not join the two; do not rivet the pins, but use sticky wax to hold the backings in place until the crown is in the investment and then solder in the usual way.

I have found this rule when followed out to give good satisfaction after using it over a year, having had no trouble with checked teeth.

Gum Tragacanth to Assist in Gaining Suction for Upper Dentures.—In cases of flat and hard mouths it is also troublesome for the dentist to make the denture stay in place, especially if the patient has never worn one before.

Moisten the roof of the palate, and sprinkle it thoroughly with the powdered gum and insert it in the mouth, the gum being very sticky and perfectly tasteless, it holds the denture in place until the paient learns to use it.

What We See and Hear.

[We are always pleased to receive short, practical articles for this department, and invite any to send brief descriptions of such appliances, devices, methods, remedies, etc., as will be of interest to the profession.]

Saccharin is proving to be an excellent antiseptic.

Chloroform when added to fermenting solutions will prevent it.

Tincture of benzoin is an efficient remedy for chapped hands and lips. It also has done much good in frost bite.

For cold in the head, while in the acute congestive stage, there is no better remedy than gelsemium. One good, large dose, say ten minims of the fluid extract, taken upon going to bed, will effectually dispose of this troublesome and uncomforable affection. One dose is usually sufficient.

Impression for Inlays.—A simple way to secure a good impression of a prepared cavity for an inlay is by the means of gutta-percha, not the red tenacious gutta-percha, but any of the white pellets; do not dry the cavity thoroughly, and the impression can be withdrawn, obtaining a copy of even the deep undercuts or retaining points.—*Review.*

Antiseptic Soap.—An antiseptic soap for physicians and nurses, which has been found to possess the property of closing scratches and healing sores and cracks, has been introduced by M. Vigier, and is having considerable sale in Paris. It is made of 12 parts dried sulphate of copper incorporated with 88 parts of any good soap material. The product has a pleasing green tint and is devoid of any irritating action.—*Sci. Amer.*

Attend Dental Societies.—No matter how carefully a man may read the literature of his profession he always lacks something of being professionally rounded out unless he attends societies. There is no personal magnetism in the report of a dental meeting, but there is in the meeting itself if the right kind of men are in attendance. And almost always there are enough men of the right stamp to make a meeting interesting to those who are really seeking to be interested.—*From Ed. in Dental Review.*

The Conservation Treatment of the Dental Pulp.—In a paper read before the American Dental Society of Europe, Dr. A. C. Hughenschmidt, of Paris, summarizes his treatment as follows: First, wash out cavity with a 1.200 solution of bichloride of mercury. The capping is powdered iodoform and salol mixed with lanolin and covered with mica, the rest of the cavity being filled with oxyphosphate or oxychloride of zinc. In cases where pulp is fully exposed and unprotected by decalcified dentine it should not be capped at once. In summing up he says: First, in healthy, freshly exposed pulps salvation is not only possible but probable; second, pulps long exposed, but not suppurating, can be saved in a large majority of cases; third, in suppurating cases the pulp can only be saved after proper antiseptic care, and not in all cases; fourth, tumors of the pulp require extirpation and the removal of the entire pulp.—*Dent. Record.*

Aristol.—Not the least interesting and altogether satisfactory application of aristol in dental practice is the use of its chloroform solution instead of sandarac varnish for saturating cotton used for wedges or temporary stoppings in retaining medicaments during treatment. A pledget of cotton saturated with aristol dissolved in chloroform, upon evaporation of the solvent, has its fibers held together by the peculiar resinous character of the aristol, in which condition the pledget fulfills the physical requirements of a cotton and sandarac wedge, but with the special advantage that it is entirely antiseptic, which in this instance means more than might at once appear. Such a dressing or wedge may be retained in the mouth for days or a full week, and when removed is entirely free from offensive odor, while the peculiar fetor which arises from a similar application of cotton and sandarac varnish is a constant drawback to its use, sufficient to bring about its disuse by many operators because of the annoyance to themselves and their patients.—Dr. Kirk, *Cosmos.*

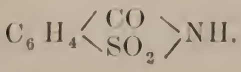
To Color Iron and Steel a Dead Black.—A new blacking fluid has been invented by M. Mazure. According to *Cosmos*, this liquid has the following formula:

Bismuth chloride	1 part.
Mercury bichloride	2 “
Copper chloride	1 “
Hydrochloric acid	6 “
Alcohol	5 “
Water	50 “

Mix. To use this fluid successfully, the article to be blacked or bronzed must be clean and free from grease. It may be applied with a brush or swab, or, better still, the object may be dipped into it. Let the liquid dry on the metal, and then place the latter into boiling water, and maintain the temperature for half an hour. If the color is then not as darked as desired, repeat the operation. The editor of the *National Druggist* finds it to work beautifully. After getting the desired color, the latter is fixed and much improved by placing for a few minutes in a bath of boiling oil, or by coating the surface with oil and heating the object until the oil is driven off.—*Sci. Amer.*

MOUTH DISINFECTION.—One factor which renders the sterilization of the mouth so difficult, is the constant presence of fat, which prevents the antiseptic from readily penetrating small particles of food, as well as from coming directly into contact with the teeth. In the hope of rendering the bacteria more accessible to the antiseptic, I first rinsed the mouth slightly with a ten per cent. solution of peroxide of hydrogen, following it up with the mouth-wash. In other cases again I used the five per cent. solution of peroxide of hydrogen instead of water in preparing the mouth-wash.

For the last year I have been making experiments with saccharine, which manifests a very considerable action upon the bacteria of the mouth. It appears also to be one of the least poisonous of the substances recommended for the treatment of the oral cavity, and has no deleterious action upon the teeth. Its greatest drawback is its intense sweetness, which to some persons renders it very unpleasant. It is not, however, the sweetness of sugar, saccharine not belonging at all to the sugars or even to the carbohydrates, being chemically an anhydride of a sulfobenzoic acid,



$$C_6H_4\left\langle\begin{matrix}CO\\SO_2\end{matrix}\right\rangle NH.$$

I have employed it in the following form:

℞—Saccharini, 2.5;
Acid. benzoic., 3.0;
Tinct. ratantiæ, 15.0;
Alcohol. abs., 100.0;
Ol. menth. pip., 0.50;
Ol. cinnam., 0.50.

Three parts of this to twenty-seven parts of water kept in the mouth a full minute has a very marked effect upon the number of living bacteria in the mouth. If instead of water we use a four per cent. solution of peroxide of hydrogen in connection with the tincture, we obtain a still more striking result.—Dr. W. D. Miller, *Cosmos.*

Erosion.—You know how rapidly the teeth of those who grind the teeth at night disappear on the cutting edge; how soon they are reduced to almost stumps. It is not the grinding solely, in my judgment, but a combination of acid and wear. I have always secured an acid reaction in mouths tested at night, though neutral in the daytime. If this be the case, we can understand erosion. As I said at the New Jersey State Society, I do not regard this action of erosion as a difficult problem; it is one of simple things; and if we look at it in the right light, always taking the acid view of the question from the beginning, it will will lead us up to clear conclusions in regard to results.

On the whole, the matter of erosion I regard as altogether a chemical one; and to me it is immaterial whether it be the anterior or labial surfaces of the teeth that are worn away. It is unquestionably always due to the acid condition, and I do not, as I have stated in others papers and discussions, separate abrasion from erosion. Abrasion may be by simple attrition of one tooth upon another, and that attrition always advances, in my opinion, by an acid condition.

The acid of lemons and fruits of similar character, I am inclined to think, is more destructive to teeth than any that our patients are in the habit of using. It is a very common thing for some persons to puncture lemons and take the juice directly into the mouth. Some persons like it, but I cannot witness it without a shudder.

The aoid of lemons will destroy teeth in a very few weeks.

I had an excellent illustration of that fact. In crossing the ocean, a member of my family, against my advice, made use of lemons to overcome sea-sickness. The teeth were all right when we left home, and in three weeks' time they exhibited marked signs of erosion on the surfaces of the anterior teeth. I have noticed this occurring constantly in the use of fruits of this character.

With regard to acid remedies much in use, I agree with Dr. Guilford. These phosphates are destroying teeth by the hundred. There is no question about it. The sooner the dental profession protests, the better. I think it is our duty to warn our patients.—DR. TRUMAN, *Penn. So.*, *Int. Jour.*

TREATMENT OF PYORRHŒA ALVEOLARIS.—DR. SUDDUTH: After the condition which we understand as pyorrhœa alveolaris, where there is suppuration coming around the root of the teeth, where there is a pocket, where the saliva has free entrance into this pocket, unless we can establish an antiseptic condition of the mouth we will have recurrence of the suppuration. That stands to reason. So long as the saliva can find its way through the tissue you will have the suppuration. My line of treatment has been to first mechanically remove all of the tartar found around the tooth, set up an inflammatory condition there, then prescribe some antiseptic wash. I have found chloride of zinc about as good as anything. Give about 20 grains to 4 ounces of water, tell the patient to dilute that 4 or 5 times if it is too strong, and that can be used for a great length of time without injury. If you do not get healthy granulations, I believe in sponge grafting. Secondary tissue developed by sponge grafting is of the character of cicatricial tissue, and it binds. Antiseptics, until you get rid of the pocket, are very necessary.

DR. ANGLE: By extra cleanliness we may retard the progress of the disease and prolong the usefulness of the teeth. But we cannot restore them to their original health or prevent their ultimate loss. The free use of peroxide of hydrogen daily injected into the pockets and festoons has proven the most beneficial of any line of treatment we know of.

DR. MARTINDALE: My lines of treatment are as diverse as are the causes of the disease and its variations and complications with constitutional diseases, especially rheumatic, syphilitic, tuberculous and scorbutic. I usually use, however, during one stage of nearly all cases peroxide of hydrogen ℥ j to gr. j hydrarg. bichlor. All so-called sure cures and specifics are fallacies.

Dr. Brimmer: At first injections of peroxide of hydrogen, afterward aromatic sulphuric acid and tincture of calendula.

Dr. Goodrich: My experience has been limited, because I have not had an opportunity to dismiss a case, unfortunately for me they have all dismissed themselves before a cure was effected, so I can't say that I have a special line of treatment.

Dr. Patterson: I rely almost solely upon *expert* surgical manipulation, afterward *absolute cleansing and hygiene of the mouth.*

Dr. Ingersoll: Antiseptic, astringent and stimulant. Sulph. zinc is astringent, tonic, anti-microbic and alterative, and has a very beneficial effect after thoroughly cleansing and disinfecting. A pus destroyer first, then to restore the functions of the tissues comes next, which is just as important in curing the disease as to destroy the pus.

Dr. Black: Stimulating antiseptics: Cleanliness.

Dr. Thompson: Thorough removal of deposits and periodic application in the pockets, of aromatic sulphuric acid, full strength. Very little has been said by the gentlemen from whom I have quoted about constitutional treatment. I believe most cases can be treated more successfully by systemic in conjunction with local treatment, and would suggest the use of arsenicum every day in the week and sulphur on Sunday.—*Minn. So., Review.*

Books and Pamphlets.

ANNUAL OF THE UNIVERSAL MEDICAL SCIENCES. A Yearly Report of the Progress of the General Sanitary Sciences throughout the World. Edited by Charles E. Sajous, M. D., and Seventy Associate Editors, assisted by over Two Hundred Corresponding Editors, Collaborators and Correspondents. Illustrated with chromo-lithographs, engravings and maps. Five volumes. Philadelphia: F. A. Davis. 1891. Price, cloth, $15.00; half Russia, $20.00.

The issue of this stupendous work for the year 1891, completes the fourth year of publication. This edition does not vary materially from previous volumes save perhaps the researches in medical science have developed facts of more than ordinary interest during the past year. The arrangement and classification of the subject matter are thoroughly systematized and it would be difficult to suggest how the work as a whole could be improved upon. Aside from the regular branches of medicine many subjects, such as Growth and Age, Inebrity, Histological and Microscopical Technology, Bacteriology, etc., are treated upon quite extensively. The department of Oral and Facial Surgery occupies 76 pages compiled principally from articles that appeared in medical journals. This department is not as complete as it might be, so far as it relates to the dental art, and the appointment of a competent D. D. S. as associate editor in this department we think would enhance its worth. A reference list placed this year at the end of each volume adds to its value. The lithographs and wood engravings used are excellent and the printing and binding all that could be desired. In our limited space we cannot give a comprehensive review of this work; it should be seen to be appreciated.

BOOKS AND PAMPHLETS RECEIVED.

A Treatise on Practical Anatomy, by H. C. Boenning, M. D. Price, $2.50. Philadelphia: F. A. Davis, Publisher. 1891.

Transactions of the Illinois State Dental Society, held at Bloomington in May, 1891. Chicago: Dental Review Co.

Hand-Book of Materia Medica, Pharmacy and Therapeutics, by Sam'l O. L. Potter. Third Edition revised. Philadelphia: P. Blakiston, Son & Co. 1891. Price, cloth, $4.00; sheep, $5.00.

Our Aftermath.

United States Coinage is alloyed with ten per cent. copper.

Aluminum wire as a plate strengthener is a delusion and a snare. It is not elastic and becomes brittle.

The Dental Practitioner and Advertiser, Buffalo, N. Y., will succeed *The Dental Advertiser* January first next, and Dr. W. C. Barrett will be the editor.

Her Younger Sister.—"I *must* have this tooth out—it hurts so." "Oh—*please* don't—or *I* shall have to wear it—as I do *all* your left off things."—*Harper's Magazine.*

Dr. J. R. Callahan, Cincinnati, is one of the singers in the concerts of the Apollo Club of that city, and will probably be the next president of the State Dental Society.

"Odontunder."—A subscriber writes: "I hasten to correct what I believe to be a bogus formula given without thinking what the effects may lead to, as I also have been often mislead and spent much time on useless experimentation trying to utilize articles printed at random in our journals. The original "Odontunder," which I have been using about two years, contains at least a 10% solution of cocaine, and to counteract the after effects a couple of grains of iodoform are added and, if you please, a trace of oil of peppermint; pour off after standing a week and use only the clear liquid, hypodermically."

In regard to all such nostrums our advice is, DON'T use them.

PEROXIDE OF HYDROGEN.—Having tried all brands now in the market, we have found the "O. C. Peroxide of Hydrogen (medicinal)," the most reliable. There is very little acid reaction, it is full strength, and stable at ordinary temperatures.—W. H. S.

HER ONLY SORROW.—"But the feminine footlight favorites are not all in the same category of unreasonableness. He would be a very difficult manager to please who couldn't get along peaceably with Fannie Rice, whose only sorrow is that her husband is obliged to hurt people by pulling their teeth, as is required in his profession of dentistry."—F. D. M.

A SUBSTITUTE FOR GUTTA-PERCHA.—M. Da Costa, a Portuguese, is reported to have discovered an excellent and abundant substitute for gutta-percha near Toa. It is the solidified fluid which issues from the Nivol-cantem, which grows wild in the Concan district, and is generally planted in hedges. It is insoluble in water, softens under heat, and hardens in the cold; receives, moreover, and retains a given mold; can be cast into very thin sheets, and is capable of taking the minutest impressions upon its surface. Though of a white appearance when it flows from the tree, it is in its dried state of a chocolate color, bearing a close resemblance to gutta-percha.

DR. CHAS. T. STROUD.—Dr. Charles T. Stroud, who had been ill at his residence on Columbus avenue for the past two weeks, died last night. His death was not unexpected, for he had been lying in a critical condition for several days.

Deceased was 71 years old and was the father of Mrs. Edwin Gillard, Dr. Eugene Stroud and Dr. Chas. Stroud, the dentist. He was one of Sandusky's best citizens and will be greatly missed, especially by the older residents with whom he has been associated for the past twenty-five years. He came to this city from Rochester, N. Y., and began the practice of dentistry, which prosession he followed until near the date of his death. Besides being prominent in other social circles he was also a member of the Masonic fraternities of the city.—*Sandusky Register.*

DOC. BUSHONG is holding a cheap job of umpiring in a minor League at the risk of losing his life for bad decisions and the fact forcibly reminds one that nine out of ten ball-players who talk of retiring are bluffing. Doc was one of the best "bluffers" in the profession. He used to work it regularly, and pulled off many an extra dollar by doing so. He is a practical dentist by profession, and in his halcyon days as a ball-player, when contract signing time came, used to say both with an independent air and way, "I can make a good living at my profession and I intend to quit base-ball." Doc worked this regularly while he was in demand, and now that he has begun to go back holds on to any base-ball job he can get as fast as glue. He will never turn his attention to decayed molars as long as he can hang on to the profession in any capacity.—*Daily paper.*

TELL US SOME MORE.—Says an American dentist who is practicing in Mexico: "I am getting rich, and any good American dentist who will come here and stay can do likewise. I made $1,000 the first year, and I have done considerably better right along since that time. I can charge bigger prices. I get from $100 to $150 for a full set of teeth on rubber. The same thing in the States costs you $15. Whenever I administer gas I charge $10 for the pulling of a tooth, and when a number are pulled I charge $10 for the first tooth and $5 for all succeeding ones. For jerking out a tooth without gas I charge $2, and in the United States you would only get 50 cents for this work. As to fillings, they range from $5 upward, and gold fillings cost from $15 up into the hundreds, according to the size of the cavity and to the size of the bank account of the man who has his teeth filled. I always get $500 for making a set of teeth on gold, and all other business is done at proportionate rates. I know of many dentists who are making more than I, and I know of a number who charge more than I do. I often make $1,000 a month, but dentists in the City of Mexico make more, and I know a man there who gets $50 a tooth for any kind of filling, and who came to Mexico from South America, where he made $40,000 in a single year."

PHENACETINE-BAYER, Sulfonal-Bayer, etc., is a profitable German enterprise. *The Pharmaceutical Era* is authority for the statement that the Farbenfabriken, late Friedrich Bayer & Co., of Elberfeld, Germany, with a capital of 9,000,000 marks—a German mark is 23 cents—obtained in 1890 a net profit of 3,455,465 marks. This house, and others doing a similar business, are primarily manufacturers of aniline and allied dyes, but a most important addition has been the production of various medicinal articles which are grouped simply under the name of new remedies. These synthetical products have multiplied in number very greatly during two or three years past.

The United States has provided a great field for disposing of these pharmaceutical products, and a very great proportion of the profit of the entire business may be credited to these synthetical remedies alone, from the fact that all or nearly all of them are protected by trade-marks and other regulations in this country, thus allowing the obtaining of an exorbitant price for them. An article which can be sold in Germany for a certain sum, when protected by a United States trade-mark, will bring four or five times as much. Possibly if some of [illegible] legislators were to inquire into the justice of certain enactments in force and bearing upon the drug trade, there might be some little amelioration of the present evil condition of affairs.